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The Madras Journal of Literature and Science

FOR THE YEAR

1879.

EDITED BY

GUSTAV OPPERT, PH.D.,

PROFESSOR OF SANSKRIT, PRESIDENCY COLLEGE, MADRAS;
TELUGU TRANSLATOR TO GOVERNMENT;
CURATOR GOVERNMENT ORIENTAL MANUSCRIPTS LIBRARY;
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CONTENTS.

		Pages
I.	On Hygiene in Ancient India, by Surgeon-General C. A. Gordon, M.D., B.C.	1—35
II.	Antiquities of Māmaṇḍūr in North Arcot District, by M.C.S.	36—42
III.	On the Names of Places in Tanjore, by Lieutenant-Colonel R. B. Branfill, G.T.S.	43—92
IV.	A Brief Sketch of the Yerukala Language as spoken in Rajahmandry, communicated by the late Director of Public Instruction	93—102
V.	Historical Tables concerning the Presidency of Fort St. George, communicated by the Compiler	103—134
VI.	The Ultimate Source of Common Salt, by Surgeon-Major J. J. L. Ratton, M.D.	135—166
VII.	On the Weapons, Army Organisation and Political Maxims of the Ancient Hindus, with special reference to Gunpowder and Firearms, by Dr. Gustav Oppert	167—318

PLATE.

I. One drawing (*facing page* 38).

The
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and Science.

ON HYGIENE IN ANCIENT INDIA.

An inquiry having reference to *Hygiene* in ancient India is at the present time of considerable interest. Such an investigation, however, is attended by not a little difficulty, and, in the absence of other particulars regarding it, must be prosecuted rather in the pages of historians and poets than in those of regular medical treatises. In the following remarks I accordingly desire to collect such observations bearing upon the subject as have come under my notice,* they being arranged for the sake of greater convenience into those that bear upon General Hygiene and those that more properly belong to Army Hygiene.

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* The following are the works to which I am chiefly indebted for information, namely:—1, Ancient India as described by Megasthenes and Arrian, by J. W. McCrindle, A.M.; 2, History of India, by J. Talboys Wheeler; 3, The Indian Antiquary; 4, Hindu System of Medicine, by T. A. Wise, M.D.; 5, Ancient and Mediæval India, by Mrs. Manning; 6, Calcutta Review, No. 83 of 1865; 7, Asiatic Researches; 8, Colebrook's Essays; 9, Professor Wilson's Works; 10, Travels of Buddhist Pilgrims, S. Beale; 11, Legend of the Burmese Buddha, Bishop Bigandet.

Note.—This paper does not pretend to contain more than an imperfect sketch of the subject of which it treats; it may, however, form a groundwork for further investigations regarding the different points alluded to in it.

I. GENERAL HYGIENE.

1. *Historical Allusions to Hygiene.*—That the preservation of public health—in other words *Hygiene*—was in the very earliest periods of India's history considered in relation to general polity is apparent from the frequent allusions to it contained in "The Institutes of Manu;" nor is the circumstance less evident from the tenor of those institutes, that the state of society to which they refer was in many respects advanced and refined. Here, for example, is an enumeration of subjects touched upon by that great law-giver, namely, 1, On the Creation; 2, On Education, or on the "First Order;" 3, On Marriage, or on the "Second Order;" 4, On Economies and Private Morals; 5, On Diet, Purification, and Women; 6, On Devotion, or on the "Third and Fourth Orders;" 7, On Government and on the Military Classes; 8, On Judicature and on Law, Private and Criminal; 9, On the Commercial and Servile Classes; 10, On the Mixed Classes and on Times of Distress; 11, On Penance and Expiation; 12, On Transmigration and Final Beatitude. The Ayur Veda, propounding the science of health, contains various allusions to subjects more properly within the province of Preventive Medicine—*Pathyāpathya*, that is *Hygiene*, including the care and diet suitable for children,—the universal *panacea* that would render health permanent and perpetual, and *prevent*, as well as cure, diseases,—besides various distinct precepts for the preservation of health. Similarly, the Atreya includes preventive as well as curative medicine, although several of the subjects therein described under the first-named category have long since ceased to be looked upon as within the province of hygiene.

In that ancient work there are chapters on the classification of diseases; the physical influence of soil and season; on age and temper, and on the influence of the winds—in other words on medical geography and climatology, the qualities

of different kinds of *water* as that of the Ganges "which comes from heaven," sea-water, rain-water and that from snow and ice; the qualities and medicinal properties of *milk*, as that of kine, goats, ewes, buffaloes, camels, and lastly of women; also remarks on butter-milk; on sugar-cane; on sour gruel; infusions of rice, barley, and other grains; oils, different kinds of grain; fruits; on the four kinds of spirituous liquors as made from molasses, honey, mead, and a plant (Bassia?); on the medical properties of different kinds of flesh, as of hoofed and horned animals, beasts of prey, birds, fishes, serpents, whether of the water or of arid districts; and on the *moral* causes of disease.

The exact dates of the Ayur Veda and Manu's Law Code are not known, but we may pretty safely fix them a few centuries before our era.

2. *General Condition of the People.*—Several particulars with regard to the general condition of the people of India during the Vedic period are to be gathered from the descriptions of early life contained in the story of the greatest Indian Epic, the Mahabharata. Then, as at the present day, the majority of the countrypeople lived in *huts*, for, as is still the case, the nature of the climate required the greatest simplicity with regard to accommodation, and also as to clothing; they smeared the mud-floors and walls with cow-dung by way of cleansing them; they sprinkled water upon the floor and passages before sweeping; they decorated their dwellings with flowers, and, in times of rejoicing, assembled under canopies made gay with streamers and decorated with flowers. As population increased new settlements were formed, the jungle being for this purpose cleared by means of fire and axe, and huts or villages erected in the newly-opened-up space. Their sacrifices to their gods consisted of the choicest articles of their food, including flesh-meat and simple cakes, parched grain, ghee or clarified

butter, curds, and the *Soma wine* or *Indra's drink*, a wine or rather spirit prepared from the fermented acid juice of an *Asclepias*, namely, the *Asclepias acida*, *Sarcostemma viminalis*, or *Cynanchum viminale*. This drink was indulged in to great excess on occasions of Bacchanalian festivals, dating, it is said, from about B.C. 1400. Upon this beverage the Pandavas are described as indulging to an extent that was abominable, having at the same time promiscuous intercourse without regard to relationship, eating flesh extensively, and, in this drunken and debauched condition, dancing together in a medley.

Among them the art of cookery was held in high esteem; the office of cook was a position of honor and trust; thus Bhima was appointed by Rajah Virata head cook as a mark of distinction. There were regular *washermen* as a separate class, and particular allusion to them occurs in the time of Krishna. As to arrangements of *conservancy* in establishments, so far as can now be gathered, the fields and forests served all such purposes. That the value of pure water was fully appreciated appears from the circumstance that among the most esteemed works of charity was the excavation of wells; another the erection of rest-houses for travellers. Among the most expressive marks of hospitality was the bringing of water to wash the feet of the dusty way-farer. It is satisfactory to learn also that in those times long gone by the *duration of human life* was estimated as one hundred years; nor have we much improved on that standard during the three thousand years more or less that have elapsed in the interval. The circumstance of a person being attacked by *disease* was looked upon as so far a disgrace that illness was inflicted by the gods as a punishment for sin committed. Hence Brahmins who feared its approach would burn themselves alive rather than undergo its sufferings; others, more submissive held festivals on making a recovery.

Of the early Aryan invaders it is said that they were much given to indulgence in wine, women, animal food, and high play; in all of which respects their habits were not so very dissimilar after all from some of the more modern occupants of India. Horse-flesh was by them largely consumed, it having been looked upon as having stimulant qualities. Rama and Sita, while wandering together in the jungle, are said to have lived chiefly upon venison dried in the sun, as is the custom at the present day with the American Indians. Animals were sacrificed to the gods, their flesh then eaten; instead of these animals, after a time oblations of rice and milk were offered as sacred food, and as Brahminism became established vegetable food was substituted for animal. Indulgence in wine continued to be a prevalent vice; in other words the worship of Varuni (goddess of wine) was very general; sellers of intoxicating drinks, however, were looked upon as inferior, being classed among sellers of flesh, iron and poison. But although indulgence in strong drinks was thus general, the vice of drunkenness, like licentiousness, was deemed to be disgraceful. In aftertimes the Buddhist laws against drunkenness were held to extend also to the use of opium and other intoxicating drugs.

In Vedic times the warrior classes were polyandrous and polygamous according to circumstances, including no doubt convenience; the peaceful classes, however, observed monogamy. But in other instances, as in that of the Sakyas, marriages took place between brothers and sisters, as indeed is done at the present time in Upper or Native Burmah. This union was, and is, however, regarded with the utmost detestation by the Brahminical law. Suttee had not then come into use; a widow was directed to devote herself to works of charity, and under Manu's law to marry the brother of her deceased husband, "or any other man." According to Manu, marriages were prohibited within the sixth degree

of relationship; also with a person who was subject to consumption, indigestion, epilepsy, leprosy or elephantiasis, deformed, with one who had inflamed eyes, or who suffered from habitual sickness. In selecting a wife one should see, that her form is without defect, that she walks gracefully "like a young elephant;" that she has a moderate quantity of hair, teeth of moderate size, and an exquisitely soft body. Certain classes of persons were excluded from *Shraddhas* or funeral feasts, doubtless for hygienic reasons, although their precise nature does not now appear. Among the persons thus excluded were those afflicted with physical evils, such as leprosy, blindness, and elephantiasis; those guilty of certain kinds of immorality; sellers of meat, wine; gamblers, and *physicians;* the latter no doubt, because their profession led them among uncleanness of many kinds.

A very vivid picture of the condition of the people in the Buddhist period occurs in the work of Hiouen-Thsang. There was then no registration of families for taxation, no requisition for gratuitous labor; all who were employed on the construction of royal buildings or other public works were paid according to their labor; cultivators occupied the heritages of their fathers and paid to the king as taxes one-sixth of their produce; transit duties on merchandise were paid at ferries and barriers; the punishment of death for crimes was not inflicted, banishment "to the desert mountains" having been its substitute. At the proper time the agriculturists permitted the streams to overflow the land, by which the soil was rendered soft and fertile; provisions of all kinds, cereals and fruits, were very abundant, and in the evening "the sound of convent bells might be heard on every side, filling the air with their melody."

Numerous allusions to what we may term "Sanitary" conditions during the Brahminic period occur in the Ramayana. That great epic poem opens with a description of the

ancient city *Ayodhya* represented by the modern Fyzabad, and it was but an example of many as they then existed throughout India. The houses are there described as large and beautifully arranged; the streets always watered; the gardens pleasant, full of birds and flowers, and with many groves of fruit trees; the tanks of the city magnificent beyond all description and covered with white lotus (*Nymphea lotus alb.*); birds swam upon the surface, and a border of plantain trees surrounded each tank. Around the city were lofty walls, and outside them a moat filled with water, deep and impassable like that of Palibothra, no doubt a receptacle for the city sewage. Ayodhya was full of people; every one was healthy and happy; everybody was fed on rice, and, as recorded, well-fed; children were numerous, and "no man lived less than a thousand years," that is, no doubt, many attained a ripe old age. Men fixed their affection "upon their wives only,"—a very proper state of society indeed; women were chaste; no one was poor or fed on unclean things; in all Ayodhya there was not a man or woman who was unfortunate, or foolish, or wretched, or diseased. Those were surely the "good old times" of India, the "golden age" of society and of propriety. During the Vedic period regular roads did not exist; hence, on the occasion of the advance of an army or of a chief, communications of this kind had to be opened up for their passage. Even before the date of the Ramayana, however, large tracts of the country had been intersected by roads, along which pillars or milestones were erected to mark distances; inns for travellers had also been erected. A regular system of village communities existed,—their rights and privileges well defined, the affairs of each village conducted by officials appointed for the purpose. Among the works connected with each village, trees with creepers, chiefly convolvuli, were planted; lakes, wells, and streams were formed, partly for use by the people, partly

to serve as boundary-marks. The people paid their taxes in kind. As charitable works they constructed tanks, ghâts, and rest-houses for travellers, and feeding the poor and afflicted.

3. *Topography and Climate.*—Many allusions occur in the history of ancient Hindu medicine to the influence of locality and climate, as also the manners and customs of peoples, on disease, and to the consequent necessity on the part of an accomplished physician to study their influence on the spot,—in other words, to travel. *Charaka* thus writes on the subject of *climate* and *locality*: "The moist country *Anupa* is intersected by rivers; the air is cool; lilies and other water-flowers abound; geese, ducks, cranes, fish, and serpents are numerous." In such a situation the inhabitants are unhealthy and short-lived; "the juices of the body require to be *dried* by the use of hot, dry, and light food in small quantities so as to strengthen the internal fire." Such a locality would now be said to be swampy and malarious, the inhabitants affected with malarial cachexy.

The second kind of country described is the hilly or *jangala*, characterised by arid plains on which dwarf trees and prickly shrubs grow sparsely; the heat of the air is great and hot winds prevail. In such a country there is little water upon the surface, and wells have to be dug. The diseases of "air and bile," that is intestinal and hepatic, are most frequent, but the climate is healthy and the inhabitants are longlived. It is remarked that "when a person is born in a particular climate and has air, bile, and phlegm deranged," these affections will be aggravated if he go to a worse one, but, "if he journeys to another and better climate," the tendency to disease will be removed, showing clearly that the effect of *change of climate* was then understood and appreciated. It is further added that, when the above enumerated climates are found in the same country, the general climate of that country is described as *mixed*.

4. *Seasons.*—Numerous allusions occur to the influence of season on health and disease. Thus it is stated bile varies in different seasons: in July and August it is increased; in September and October it is liable to be diseased; in March and April it is diminished. Chyle is also said to be deranged by the seasons: in November and December it is increased; in March and April it is liable to be deranged; in May and June diminished. Six seasons were enumerated: *a. Cold months, i.e.*, January and February; warm clothing was then to be used; broths of flesh and fish-meat and substances mixed with ghee (clarified butter) to be taken; the wine called *Sídhu* to be used; also honey with water, milk, sweetmeats, fat, and new rice; warm water to be used; the head and body oiled; the person to sleep near the centre of the house removed from the wind. *b. Spring months*, March and April; bodily exercise; tepid water for every purpose; use barley and wheat, the flesh of deer, hares, wild fowls; drink *Sídhu* and *Mada* wine. *c. Hot months*, May and June; use cool foods and food prepared with ghee; drink sherbets; use broths of wild animals and birds; eat rice with milk and ghee; little wine is to be used, and always mixed with much water; do not take much exercise; sleep during the day in a cool room and at night in the upper rooms, and use the hand-punkah sprinkled with sandal wood and water. *d.* The *Rainy season*, July and August. Water is impure during this season; the use of river water is to be avoided, as also exposure to the climate or to the sun, and too much exercise; the wine of grapes and fresh water that has been boiled are to be drunk; anoint the body with fragrant oil; bathe daily; use light white clothes, and live in a dry and high house. *e.* The *Moist season*, September and October. The water is pure and may be used freely for bathing and drinking. The food produced during this season is not good, but is improved by keeping *if it admits of this.* Use purgatives

and blood-letting; avoid exposure to the sun, heat, and night air, more particularly the east wind; sleeping during the day is to be avoided, also fat, oil, fish, the flesh of amphibious animals and acids. The clothes should be light *and clean*, the mention of the latter being remarkable in as much as it is not elsewhere alluded to in this category. *f.* The *Cold season*, November and December. The water becomes clear, cool, and heavy; *bilious* diseases, common during the preceding two months, diminish; mists hang over tanks and rivers; diseases from "bile" are cured.

Irregularities of the seasons are alluded to as producing an unfavorable effect on health; food, water, and medicines lose their good effects, and various diseases are produced; plagues prevail. Easterly wind increases "phlegm;" westerly wind increases internal heat, dries the body, and diminishes bulk and strength; northerly wind is soft, cooling, and slightly sedative; southerly wind is pleasant and does not produce heat, and has also a light and sedative influence. Thus, in all the points enumerated, it is evident the ancient Hindu physicians observed minutely and well.

5. *Towns and Cities.*—In the seventh century A.D. the surface life in Indian towns was much as it is at the present day, and as it had been for generations before that time. Hiouen-Thsang describes the tortuous streets and lanes, the brick houses and verandahs with walls plastered with cowdung; the roof either of bamboos and dry grass or of planks and tiles. There was, however, under Buddhist rule, an absence of all butcher-shops and wine-sellers; but outside the cities were the secluded dwellings of the lowest classes of the people—the Chandalas. The dwelling-houses were inside elegant, but outside plain. The ground in front was strewed with flowers especially in the morning. But, with regard to what may be called "conveniences," the nature of such arrangements, if indeed any of a special nature existed, cannot be detailed,

simply from absence of information regarding them. In a climate of extremes such as that of India, with dry heat at one period, and heavy rainfalls at another, refuse matters are removed to a greater extent than would be the case in more temperate regions.

Of the great officers of State, those who had charge of *cities*, were anciently divided into six bodies of five each. The members of the first looked after everything relating to the industrial arts; those of the second attended to the entertainment of foreigners; they assigned to them lodgings; they kept watch over their modes of life by means of those persons whom they gave them for assistants; they escorted them on their way when they were leaving the country, or, in the event of their dying, forwarded their property to their relatives; when sick they took care of them; when they died had their bodies buried and temporarily took care of their property; and this illustrates the manner in which the dead were disposed of in those *pre*-cremation days. The third body inquired when and how births and deaths occurred, with a view not only of levying taxes, but that births and deaths might not escape the cognizance of government. The fourth class superintended commerce and trade, weights and measures. The fifth superintended manufactured articles that were sold by public notice. The sixth class collected the *tenths* of prices of articles sold. These classes are now more or less fully represented by our City Magistrates and Town Councils.

The *village* in fact became the basis of a political organization and type of the kingdom of which it was an individual member. The headman was the rajah; there was a council of elders. At a later period it had its own officials including accountant, *watchman*, priest, *physician*, musician, and artisans of various crafts. In rural districts *inspectors* observed the yearly inundations, and looked after the great

tanks or reservoirs from which the water was distributed by canals, so that the country might be equally irrigated.

6. *Public Health.*—Of the condition of public health during the Vedic period we learn that the people were afflicted with few bodily pains, the reason assigned being that the seasons were genial, the remark indicating that climate conditions in their relation to health were observed. At that time, and for long after, physicians were believed capable of recovering persons bitten by venomous snakes, notwithstanding that in the treatment of such accidents they trusted to the then ordinary appliances of their sciences, namely, charms and incantations.

Manu was the first known improver of conditions having reference to public health. According to that ancient sage "The king is to cause broad roads, drinking fountains, and market-places to be constructed in his territory; magazines of various kinds to be prepared; herbs or medicines, roots and fruits to be collected; and to provide four sorts of physicians; to repress drinking shops, procuresses, loose men, gamblers and such like; to provide for the welfare and subsistence of the poor, orphans, old men, and widows." But the first real progress in matters of this nature took place many generations afterwards, namely, under Sandracottus. He utilized the philosophers or learned class by engaging them in the work of *experiment* and observation with a view to improve the productions of the earth, especially animals—in other words he established agri-horticultural institutions. Monks there were to seek out and relieve poverty and suffering; and in fact such works appear to have been carried out in India from time immemorial. The circumstance is also mentioned that as the people had a very *temperate climate* they were not subject to many varieties of disease. Among the many works of philanthropy performed by *Asoka*, "the Sorrowless," he established medical dispensaries

throughout the empire; he introduced a State system of instruction in moral conduct; he prohibited all convivial meetings on the ground that *much evil* attended such assemblies; a stringent law was enacted against such persons as indulged in spirituous drinks, opium or other deleterious drugs; an edict was passed that stores of medicinal fruits and roots should be maintained throughout the empire for the treatment of human beings and *animals;* also that wells should be dug and trees planted along every high road. Fa Hien saw at the beginning of the fifth century in *Pataliputra* (Patna) hospitals that had been founded by the neighbouring nobility and gentry after the manner of those instituted by Asoka. To them the poor, the crippled, and diseased *of all countries* repaired; every requisite was supplied gratuitously; physicians inspected their diseases and ordered diet and medicine according to their respective cases. It is believed that the *hospices* that had prior to that date been erected by Brahmins were rather houses of shelter and entertainment for travellers than establishments for the reception and treatment of sick. Those erected by Asoka were more purely *hospitals* as we have just seen. According also to Fa Hien each of the ninety-six heretical sects, into which the followers of Buddha became divided, erected *Punyasalas* or hospices by the sides of solitary roads so that travellers might rest and sleep therein and be supplied with all necessaries. All such establishments have long since ceased in India, but in Burmah they are still represented by the *Zyats* which occur at intervals along the thoroughfares, still known as "works of merit," but now alas! disappearing under "the march of improvement."

7. *House-construction.*—The earliest Aryan town of which we read was Hastinapura, some fifty miles north-east from modern Delhi. It appears to have at that distant date consisted of huts of mud and bamboos. At the same period,

however, the *Naga* people, among whom they had come, dwelt in *cities*, the precise construction of which is not stated, but in all probability was of similarly flimsy materials. The city of Ayodhya had strong walls and gates, and, moreover, served as a garrison. That the advantages of houses elevated from the ground were acknowledged hygienically at a very early period is evident from instructions contained in the Ayur Veda regarding the advantages during the rainy season of living in elevated apartments. The ordinary kind of houses still remain much as they were in ancient times; they are raised from the ground by being built on prepared earth. The walls are similarly constructed; the thatch is thick and extends beyond them so as to form a protection from the heavy rains, ventilation being provided for by means of a space left for that purpose between the walls and roof. The houses are divided into apartments according to the circumstances and conditions of the owner, those of a family or tribe occasionally together forming a series of squares for mutual protection. All these are usually kept clean. In other parts of India houses are made of sun or fire-burnt bricks and are two or more stories high. In particular districts these are more or less fortified.

8. *Water*.—The ancient, like the modern, Hindus were very careful about their drinking-water, and attributed various diseases to that of bad quality. They considered the water of wells or natural springs in the sandy beds of rivers as the most wholesome; that of rivers and of fountains at the foot of high hills as less wholesome; that from brooks or such as was stagnant in tanks or reservoirs as the most unwholesome of all, predisposing to indigestion, obstructions, lethargy, dysentery, and *fevers*. Water was considered to be improved by boiling. During the rainy season the use of this boiled water mixed with a little honey was recommended; further, as more particularly narrated under the head of *seasons*,

minute rules existed with regard to the quality and kinds of water to be used. In connection with temples and some other institutions the remains of ancient reservoirs and water-conduits still exhibit the care with which they were attended to, and as already observed the excavation of public tanks constituted one of the most "meritorious" acts of public philanthropy.

9. *Intoxicating Drinks.*—They had six different kinds of fermented and spirituous drinks: that prepared from the grape was called *siddha*, from raisins *mārdvika*, from the flowers of Bassia latifolia *madhulaka*, from jaggery or goor, *guda* or *sura*. In the Shastras the use of wine and spirits is forbidden; but in the Tantra they are allowed, and the worshippers of Siva indulge in their use. Spirits are described as "a kind of poison which taken in moderation and with food produce good effects, being heating, pungent, subtile, light, placid and *drying*. When taken in large quantities these qualities act unfavourably on the humours, and instead of strengthening the body will destroy it. Spirits, like medicine, when taken in a proper manner restore appetite and strength to the body." Such particulars as are available lead to the conclusion that, in the early stages of society in India, the vice of drinking was general, and that the orgies of those days were very disgraceful. One of the many good results of Buddhism, however, appears to have been the diminution of drunkenness.

10. *The Social Evil and Polygamy.*—Among the earliest disciples of Sakya Muni were "the wealthy courtesans of great cities." During the Greek and Roman period of Indian history the *public women* were employed as spies of the Government, those of cities being employed for this purpose by the civil authorities, those who followed camps, in other words, "wrens" by the military inspectors. But what will be said to this? At the ancient town of Rajagriha, to the

north-east of the city, and in a crooked defile, the physician Jivaka erected a *vihara* or monastery in the garden of Ambâpâtî, a celebrated and very beautiful courtesan, and invited not only twelve hundred and fifty disciples of Buddha, but the *sage* himself to "receive her religious offerings." Buddha accepted this invitation and received from the fair donor Amramaya the garden. The inference is clear that no disgrace was attached to the profession of a courtesan as such. During the Brahminic period the "chief courtesan" of the city of Ujain was a person of great importance. It also appears that then the prosperity of the luxurious cities of India often depended upon the attractions of the lady who held that "proud pre-eminence," and her power of alluring the rich nobles and merchants from the surrounding countries. Thus it is said "a princess of rare beauty and accomplishments was sometimes appointed to fill so equivocal a position." Nor was the courtesan always unacknowledged by the *wife*, the Hindu drama indicating that ladies of that class occasionally were recognised as part of the domestic establishment, with such results to comfort and happiness as may be readily imagined. When, early in the eleventh century, Somnath was captured by Mahmud, five hundred damsels, many of whom were daughters of rajahs, were found dwelling therein, their occupation being to dance and sing before the idol pillar. Parents consecrate their daughters even nowadays to the service of the deity in particular temples, where these often become mistresses to the priests and lead a life of prostitution.

With regard to the *sanitary* aspects of polygamy in ancient Asiatic nations, they are thus described by Rawlinson: "Polygamy destroys the domestic affections by diluting them; degrades and injures the moral character of those who give its tone to the nation; lowers the physical energy and renders the people self-indulgent and indolent. Among

the lower orders, feeling of self-respect becomes lost through taking money for their daughters from proprietors of harems; they become the ready applauders of crime and the submissive victims of every kind of injustice and oppression."

11. *Monastic Institutions.*—There appears every reason to believe that with the introduction of Buddhism monastic establishments were instituted with a *hygienic* object. Thus a large proportion of men who joined them were those who had been surfeited with pleasure, whose health had doubtless suffered thereby, and to whom a quiet regular manner of existence was in reality the best restorative. A strange mixture must those have formed who first took monastic vows! Besides those already mentioned, there were those without hope or joy in the world, voluptuaries, free-booters, filthy yogis, the healthy and the afflicted—*women* predominated. In connection with temples of various kinds the remains of which have of late years been investigated, the extent and completeness of some of their sanitary works furnish subject for wonder and admiration; this more especially with regard to reservoirs and aqueducts or conduits in Western India.

12. *Personal Hygiene.*—As in the Mosaic law, so the injunctions of the ancient Hindu sages with regard to matters of personal hygiene received the impress of religious ceremonies. Man was said to be like a coachman driving his own carriage; if this be well made and he continue to drive cautiously it will go a long time (100 years), but if he drives it upon bad roads the wheels will get injured and the carriage will soon get worn out. As a principal item under the present heading was personal cleanliness; the eyes of gods, so it was said, were too pure to behold *uncleanness;* hence numerous ceremonies were instituted, the object of which was to maintain *purity* of the person and command over the bodily organs. Among the observances which come within the scope of this

paper are the following, namely, to rise from bed sometime before sunrise; to perform the functions of nature with the face towards the north; to clean the teeth, using for this purpose a fresh branch of the *Melia azdirachta* (a bitter tonic) or *Mimosa catechu* (astringent), washing also the mouth and eyes; the teeth however not to be thus cleaned before the tenth year of age. It was forbidden to use a pot touched by persons defiled; to eat rice cooked by, or have intercourse with, women of low caste,—both of which injunctions have a very obvious hygienic bearing. The practice of *anointing* the body with oil was looked upon as conducive to health; mustard or other fragrant oil was most frequently used for the purpose, but it was laid down that the body should not be anointed at the beginning of fever, an injunction that doubtless commends itself to physicians even at the present day. Exercise was enjoined; for the sake of health limbs were to be shampooed, the nails, beard and moustaches and hair to be cut every fifth day, the hair to be combed and cleaned. Several kinds of *baths* were recommended; *cold* bathing removes the inordinate heat of the body, but if with very cold water in winter it deranges the "phlegm and air," in hot weather it increases the bile and blood; bathing is not proper in diarrhœa; bathing the feet removes impurities, local diseases and fatigue; then follow instructions as to the suitable times for bathing, having reference to business and occupation of individuals. The warm-water bath is recommended for relieving pain, and in different kinds of fever. The vapor bath is similarly employed for both those purposes. In cloudy days exercise was *not* to be taken in the open air; the bed-room should be warmed with fire; and persons should sleep on a charpoy. In autumn exercise is to be taken in the evening; sherbets and spirituous liquors are to be used. In winter the warm bath to be used and exercise taken in the morning. In spring the drinking water is to be

boiled; spirituous liquors to be mixed with it; the warm bath to be used, and exercise taken. In the hot season light food and curries to be used; the cold bath and light dresses; the body smeared with cooling aromatic applications; cool water to be used as drink, and sleep allowed during the day. Lastly, Charaka states that there are three means of preserving life—proper food, sleep, and proper government of the senses and passions.

13. *Food.*—As already observed, the inhabitants of ancient India were well-supplied with food as with other requirements. It is recorded of them in the sixth century before our era that they had abundant means of subsistence; that they inhaled pure air and drank the very finest water. All kinds of fruit appear to have been cultivated; in addition to cereals there were grown throughout the country much millet, pulse, rice and many other plants useful for food, all these being well-watered by the profusion of river streams—a remark which, applied as it was to the Punjab and adjoining districts, shows how different was then the conditions in this respect from what they now are. *Famines* were scarcely known; and as two rainfalls occurred each year, so were two crops of cereals obtained. In the third century before our era guests of Sandracottus at Patna were treated to rice and different kinds of meat "dressed in the Indian style," that is, doubtless as curries much the same as at the present time. At that time a large portion of the agricultural produce of the empire was stored up in the royal granaries and disposed of partly in the maintenance of the army and civil administration, partly sold to the trading and manufacturing classes. About this time the sacrifice of animals in Buddhist India was prohibited, involving as it did the use of their flesh as food. It is however specially stated that the prohibition in question little affected the population of the Gangetic valley who had subsisted on grain and vegetables for unrecorded ages, although they had

always sacrificed animals to the gods, especially to the female deities, who, it is said, revelled in flesh-meat and strong liquors. Fa Hien described the food and some of the social conditions of the inhabitants of the territory between Agra and Kanouj. No one except the Chandalas, *i.e.*, the very lowest class, killed any living thing or drank anything intoxicating ; there were no shambles and no wine shops.

According to the earliest works on Hindu medicine minute rules with regard to food were laid down; a few examples of which follow. Pumpkins, mushrooms, bamboo-shoots, plums, dried vegetables, unleavened bread, pig's flesh, salt, spirits when eaten or drunk with milk resemble poison ; rice which has sprouted, *masha* (*Phaseolus radiatus*), fat, honey, milk, jaggery when eaten with flesh of domestic or amphibious animals, or with fish, are so bad as to resemble poison ; milk with honey and vegetables in general should not be used together. According to Charaka there are six kinds of food, namely, *soft* food as rice ; soft *sweetmeats ; hard* food that requires chewing to prepare it for digestion ; *drinks*, liquids that are lapped ; and food that is *sucked*, as mangoes, sugar-cane, &c. Then there are six different kinds of food classified according to their taste; these are sweet, acid, salt, bitter, pungent, and astringent, regarding all of which minute rules are laid down. "For ensuring good digestion, it is said, the passions must be regulated ; the person must sleep at night in a protected room ; he must use warm water and take bodily exercise ; such observances are considered to be most necessary to health."

Although in Vedic times there was no law against eating animal food, nevertheless as in the Mosaic Code, so Bhṛigu the son of *Manu*, prohibited as food the flesh of pigs; among other articles of food similarly prohibited were garlic and onions, mushrooms and all vegetables raised in dung,—the object with regard to hog's flesh being apparent, but it

is not with the onions and garlic; at any rate, that moderate, if not tolerably free indulgence in the "pleasures of the table"—only that there do not appear then to have been tables—was permitted, is tolerably apparent from one of the injunctions having reference to this subject which may be here reproduced, namely, "a virtuous moderation, eating meat, drinking fermented liquors produces *signal* compensation." The remark is peculiar. From the account given of the return voyage to China of Fah-Hien the circumstance is made tolerably evident that, although the principal food stores laid in for that voyage consisted of *rice* and fresh water, the value of fresh vegetables under such circumstances was well understood; thus it is expressly stated that, when the ship in which he sailed touched at Ping-Tu-Chow, a supply of fresh water and of fresh vegetables was taken on board.

14. *Sleep.*—As with the modern Indians, so in ancient times, an approved maxim was "early to bed and early to rise." They slept upon a mat and used a small pillow, their bed being either upon the ground or on a *charpoy* according to circumstances. There were various rules with regard to the position of the sleeper; sleep was said to be promoted by tranquillity of mind, by music, working, anointing the body with oil, the use of the bath, by eating new rice, milk and ghee, by sherbets and spirits, and such articles as improve the health.

15. *Clothing.*—The rules with regard to clothing were somewhat as follows: After bathing the body to be rubbed with a piece of clean cloth; silk and warm *red* clothes should be used in winter; the clothes should be light, cool and thin during the hot weather; in rainy and cold weather warm white clothes of medium thickness should be used; care should be taken always to wear clean clothes, which is good for the skin, looks well, and promotes happiness and longevity. The turban defends the head from heat and cold, sandals

strengthen the feet and protect them. The *umbrella* protects the person from rain, wind and dust. A *stick* protects the person against beasts, and prevents fatigue.

16. *Physicians.*—According to Hindu mythology one of the precious gifts obtained by the *churning* of the ocean by the gods or *Devas* and demons (giants) or *Asuras* was the physician in the person of *Dhanvantari*, carrying in his hand the water of life, *Amrita*, drunk by immortals. We also read that the physicians to the gods of the vedas were the two *Aswins*, sons of *Surya*, the sun, otherwise personifications respectively of *light* and *moisture*. Dhanvantari called also *Devadasa*, having, it was said, practised medicine with great success in Heaven, descended to earth to cure men's diseases, and to instruct them in preventive (hygiene), as well as in curative medicine. He subsequently became King of Kasi or Benares.

The first member of the *Vaidya* or medical caste was of miraculous birth. Subsequently Manu laid down laws with reference to the science of medicine and its professors, the aptness of many of which must still be acknowledged. For example, he thus describes the necessary qualities of a medical student : He should be of respectable birth ; inquisitive, observant, not covetous, jealous nor lazy ; he should be a philanthropist, and his disposition should be amiable and happy. The indications of such qualifications are an agreeable voice, a small tongue, eyes and nose straight, thin lips, teeth short which do not expose the gums, and thick hair which retains its vigor. As to his duties he should know the causes and varieties of disease and *the means* of preventing and curing them; he should be acquainted with his profession; he should be acquainted with anatomy ; some severe diseases are cured immediately by a good physician, but simple diseases are increased much by the want of early assistance ; these principles were laid down more than

twenty-seven centuries ago. He should perform his necessary purifications before visiting a patient in the morning, and then visit his patient in a *clean place*, not in one where there is hair, bones, spikes, stones, chaff, broken stone vessels, charcoal, nor in impure situations.

Although according to Manu, among the official functionaries belonging to individual villages, the physician was enumerated, the circumstance would appear tolerably evident that at the date of the Mahabharata the position held by him was not remarkable for its dignity; thus, when the citizens of Sringavera went out to meet Bharata, physicians were enumerated with bathmen, dealers in incense and distillers; and yet by other allusions met with in history referring to that period, there is every reason to believe that professors of the healing art were held in high estimation.

In the third century B.C., next in estimation to the priests of Buddha was the class of physicians engaged in the study of the "Nature of man," that is, of physiology. These lived frugally on rice and meal which were freely supplied to them by the people. One class of physicians at the same time were *Sramans* or hermits; these hereditarily engaged in curing the diseases of their fellowmen, and did not accept any recompense except the dole of food as above stated. It was about this time that *Sakya Muni*, while suffering from internal complaints, is believed to have been by his physician *Jivaka* treated by means of *opium*, the effects of which drug, if tradition is to be credited, first impressed *the sage* with the idea of *Nirvana*. The history of *Jivaka* is peculiar, the name means causing *life*; he studied in Benares and seems to have been household physician to "the great reformer" of that period.

17. *Theory of Disease.*—The early theory regarding the origin of disease is somewhat thus: Mankind, as a consequence of wickedness, became divided into sects, ignorant,

restless, unhappy and afflicted with numerous diseases. According to the Atreya all diseases spring from men's actions ; all resemble *hell*, the curable as well as the incurable. Among the predisposing causes of illness the following are enumerated, namely, carrying heavy weights, severe exercise, excesses, much study, falls, fast walking or other violent movements, using too much or unsuitable food, exposure to cold or to damp air, &c. With reference specially to fevers, they were considered to be caused by exposure to the morning sun while fasting, by fatigue, fear, grief or watching ; by *drinking stagnant water* into which withered leaves have fallen, by visiting a new climate, the two latter causes having at the present time an additional interest attached to them in connection with existing theories of the origin of this large class of diseases. According to the same ancient work, the manifestation of disease depended upon derangement of the " five elements," namely, ether, air, fire, water and earth ; so by the same theory restoration to health was effected by diminishing or increasing those that were deranged with reference to their indications. That the influence of local and climatorial influences was at the same time acknowledged is evident from the heading of the fourth chapter of the Ayur Veda, namely, " On the influence of soil and season, on age and temper, and on the influence of the winds."

Some of the rules laid down regarding the treatment of disease may not even now be altogether without their value. Thus a disease is to be examined by means of the five senses. Active treatment should not be employed in a slight disease, nor mild treatment in an acute disease. Should the treatment employed be doing no good, it should be changed, but when the symptoms are yielding under a particular plan of treatment it should be continued. According to Susruta, medicines given in small doses are like throwing a little water upon a large fire, which rather increases than dimin-

ishes it; if in too large doses they will be liable to produce other diseases. Medicine should be administered according to the strength and age of the patient, and nature and stage of the sickness. After the physician has visited a patient, should the disease be complicated, he must detail the symptoms, and call in other physicians to consult as to their nature and treatment, a principle by no means unsuited even to the present period.

18. *Hygiene in Curative Treatment of Disease.*—Among the instructions for physicians laid down in the early works already quoted is that on being first called to visit a patient his inquiries should be with regard to things eaten and other circumstances likely to have caused the disease; the signs of longevity, in other words, the physical condition of the person; the nature of the disease; the seasons of the year; from what country the patient came; his temperament; the food he had been accustomed to and so on. The *treatment* is begun by strict injunctions with regard to the diet to be taken, the principle having been adopted by the ancient Hindu physicians that, "if a patient does not attend to his diet a hundred good medicines will not remove the disease;" hence they were directed to be careful with regard to diet according to season, and the kind of vessels used by them. In the fourth century of the present era the Indian physicians are said to have mistrusted powerful remedies in the treatment of disease and to have placed their chief trust in diet, regimen and external applications.

II.—ARMY HYGIENE.

1. *Soldiers.*—During the Vedic and Brahmanic periods there existed a distinct class of warriors altogether separate from the civil population. In the latter of those periods the *standing* army was composed of the soldier caste, that is *Kshatriyas*, the merchants of the *Vaisyas*, the agriculturists

of the *Sudras.* Then, as in the time of Bharata, the regular army was paid, clothed and fed by the State, and all so liberally that soldiers could with ease support themselves and others. On service they were accompanied by their wives and families. In war they were prohibited from molesting the husbandman; hence it was said, while the former were engaged fighting and killing each other as they could, the latter might be seen close by tranquilly pursuing their work, perhaps ploughing or gathering in their harvest, or pruning trees, or reaping their crops. The contrast is remarkable as compared with war during the latter quarter of the nineteenth century of the Christian era. In times of peace they underwent their *drill*, they employed their time in hunting and athletics, gambling with dice, or pursued romantic and often lawless amours; in fact, not very unlike what one reads of with regard to the military classes of certain advanced countries at the present time. In the third century B.C., the army of Sandracottus was "not composed of contributions from feudatory princes, but was a vast standing camp maintained solely at the expense of the king." *Mobilization* was then an easy matter, for the troops were always in a state of readiness to start on an expedition "furnished with all that was required throughout the campaign." In the seventh century, according to one account armies were raised according to the necessities of the state, soldiers being encouraged to enlist by promises of large rewards. This account however conflicts with that given by Fa-Hien.

Young Kshatriyas, that is men of the soldier caste, were trained to fight with their fists, to wrestle with their legs and arms, to throw stones and brandish clubs. At a later period they were taught to shoot with bows and arrows, to throw the quoit or *chakra* (in which art the Sikhs excelled up to the date of our wars against that power in 1845 and 1848), to wield swords

and spears, to tame horses and elephants, and to drive in chariots. Thus, having reference to the conditions of the period, the circumstance is tolerably clear that great attention was paid to the drill and training of troops in ancient India.

The relative value of old and of young soldiers was perfectly demonstrated during the expedition of Alexander to the Punjab, the army with which he successfully met Porus having consisted of *veterans inured to battle* ; the circumstance however still bears its lesson that the same army, worn out by fatigue and sickness, absolutely refused to advance from the banks of the Jhelum to Palibothra, that is Patna, as that great commander originally intended. Had his ranks been reinforced, and more ample provision for his sick and wounded existed, there is every reason to believe that his original intention would have been carried out.

2. *Uniform.*—That soldiers wore a particular dress or uniform in the time of the Mahabharata appears to be placed beyond doubt. Thus in the great war for the restoration of the Pandavas the respective armies wore *armour*, and were otherwise well dressed. Babhruvahana, Rajah of Manipura, on the occasion of being visited by his father Arjuna, ordered that all his troops should be in readiness in their parade dresses, also that all the men and women of that city should go out in procession, and, according to the record, a very gorgeous procession thus took place. The ancient armour alluded to appears to have for the last time been represented in the *chain* mail worn by the *Khalsa* soldiers during the Punjab wars of 1845 and 1848 ; the more usual *uniform*, alluded to as the quilted jackets, is still seen in the north of India.

3. *Rations.*—The scale of food, particularly during war, appears to have been peculiarly liberal. Thus when Bhima started for his battle against the Asura, his provisions were a waggon load of kichri (rice and dholl, *Cajanus Indica*) a fine buffalo, and a huge jar of ghee, that is clarified butter.

Here is symbolized the first war by the Aryans against the aboriginal or Turanian inhabitants of North-Western India. The ordinary food of the Kshatriya of the Vedic Aryans, so far from consisting of the simple diet of the rishis, was such articles as roasted horse-flesh and venison dried in the sun; their beverages were fermented liquors and strong wine, or rather spirits.

4. *Beverages.*—There is no doubt the military classes among the Vedic Aryans were immoderately given to drink. Among the very earliest characteristics of the *Kshatriyas,* was that "they revelled in fermented liquors," and probably also in strong wine. The Marattas, as a preparation for battle, not only made themselves intoxicated, but also rendered their elephants so. But in those days excesses of all kinds appear to have been the fashion of the time, not only among the military, but also among the civil classes.

5. *Forts.*—The hygienic rules regarding forts were distinctly laid down, albeit they were not what would now be considered very complete. In the Ramayana the statement occurs that such positions should be supplied with weapons, money, grain, beasts, Brahmins, engines (artillery ?), grass and water, the latter an important requirement as it still is. *Palibothra* in the time of Sandracottus is given as an example; the history of that city being, it is said, traceable back to the Indian Hercules, that is Balakrishna, brother of Krishna Belus or Baldeo. That fortress was of the shape of a parallelogram; it was girded with a wooden wall pierced with loop-holes for the discharge of arrows; it had a ditch in front, probably communicating with the river, for defence and *for receiving the sewage of the city.* Such appears to have been the state of that place from about 1000 B.C. to A.D. 600 when it was destroyed: and, considering the succession of seasons and the present conditions, meteorological and otherwise in Behar, little gift

of imagination seems necessary to form an idea of how offensive old Palibothra must have been. Tientsin in 1861 supplied an apt illustration to our officers and troops, who during that and the previous year occupied that port situated in Petchili not far from Peking.

6. *Armies on the march.*—During the Vedic period an army on the march presented a motley appearance. Taking *Krishna's* following as an example, there were in his camp an indefinite number of tradesmen and artisans, of women of the lowest character, gay women, flower women, milk women, serpent charmers, monkey leaders, all kinds of pedlers and show men,—all, be it observed, presenting elements the most favorable for the development and propagation of epidemic disease. When many centuries afterwards Sandracottus started from Palibothra, whether on a hunting or warlike expedition, he was attended by Yavana women, armed with bows in their hands and wearing garlands of wild flowers. On such occasions soldiers were supplied by the State with horses, elephants and waggons, all being returned by them (or accounted for ?) after a campaign. Every elephant carried four men, namely, the driver and three archers; every chariot three men, namely, the driver and two fighting men. On the line of march these chariots were drawn by oxen, the horses belonging to them being held by a halter, so that their spirit might not be damped or their legs chafed and inflamed. Just before action the bullocks were taken from the chariots, and the horses then yoked to them.

In later times the march of an Indian army has been thus described: "In their march and encampment there is the utmost confusion; when it is necessary to halt, the great object is the facility of getting water; a large supply is not everywhere to be obtained, particularly at certain times of the year, and whole armies have been reduced to the greatest distress

by being deprived even for a short time of this necessity. On arriving at camp a great flag leads the columns; each division takes up its position beyond the standard without regularity or order; the chief pitches his tent in the midst of his party, the men being arranged around without order or regularity; their shelter such only as can be extemporised by mats, grass or branches. In an army in movement the utmost profligacy prevailed; the establishments known in Bengal as *lal bazaars* existed in every camp and were freely resorted to, the generals making by them a source of profit; among the followers were mountebanks, magicians, fortune-tellers, thieves, beggars and all sorts of *useless mouths*, so that to an army of 25,000 fighting men there was a *following* of some 200,000 persons, or even upwards. In fact as were the armies of India in the most ancient times regarding which we have a history, as were those of England in the times of the Crusades, so in India they continued to be even up to the time when *red* became the color upon the map of each succeeding province.

7. *Camps.*—In Vedic and Brahmanic times, as in those of more recent date, camps speedily became offensive. Even then however there was at least one class of persons in India to whom evil smells, and consequently standing camps, were an abomination; and of whom it is related that "they were distressed with things of evil smell." In selecting camp-grounds great consideration was paid to the vicinity of wholesome water; thus in the story of Damayanti and Nala, a caravan is described as encamping by a pleasant lake fragrant with lotus flowers, that is *Nymphœa lotus*, which is still venerated by Hindus. From this circumstance it would seem that the fact was then understood that stagnant water was rendered non-malarious by means of living vegetation in it.

The following particulars regarding a camp are taken from the story of Mahabarata, namely, a level and fertile spot

abounding with fodder and fuel, not trespassing upon burial-grounds, temples, places of pilgrimage or hermitages of holy men; the site to be commodious, agreeable and well watered. The ground was measured for the camp, carrying it on one side along the sacred river *Kurukshetra* which was flowing "with pure and salubrious waters undefiled by mud and sand;" this done, *Kesava* directed a deep ditch to be dug on the other sides for the greater security of the camp. The army then marched into the enclosed space and "were arranged agreeably to the precepts which regulate the practice of encampment." Whatever was proper to do on such occasions *Kesava* commanded to be executed; stores of fire-wood and of all necessaries for eating and drinking were provided; large and handsome tents were erected severally for the chiefs; artificers dexterous in various handicrafts were there in numbers, and *skilful surgeons* were in attendance well provided with the means for healing wounds; quantities of honey and of ghee, and resin and fuel, and piles of bows and arrows were heaped up like mountains, and *Yudishthira* took care that, in every tent, fodder (food), fuel and water were abundantly provided. Great "engines of war," iron shafts, spears, axes, bows, arrows, drivers and elephants like mountains, armed with spikes and covered with harnessings of iron mail, were beheld in the camp by hundreds and thousands. When the *Pandavas* knew that their friends had taken up their respective quarters, they removed with their own divisions to their several stations, and the kings, their allies, in order to secure their triumph, "observed in their encampment the strict rules of self-denial, liberality and religion." From these particulars it is evident that a considerable degree of system and regularity was observed in the armies of those far-away-days; details do not however appear to be handed down with regard to arrangements now deemed essential in connection with military encampments.

In the camp of Sandracottus, several centuries later, it is recorded that the greatest regularity prevailed; his armies consisted, it is said, of four hundred thousand men, yet his camps were maintained in good order and discipline; no useless or disorderly multitudes were tolerated in them, and it is particularly mentioned that theft was extremely rare.

8. *Rules of Combat.*—In battle the proceedings of the opposing parties were after this manner. The *Kauravas* and the *Pandavas* sallied from their respective camps each morning; they engaged each other in masses and by single contests; the survivors on either side returned to their respective camps at sunset and passed the night in perfect security. As to their actual manner of fighting at a distance, each of the contending forces sent showers of arrows at each other; at closer quarters men fought each other with clubs, knives or swords and clenched fists; they cut and hewed and wrestled and kicked until the conqueror threw down his adversary; he then severed the head from the body, carried off the ghastly trophy, sometimes drinking the dripping blood as he went.

So long as men were actually engaged in actual combat, as we learn of the armies of *Arjuna* and *Krishna*, their rule was to slay or be slain, but "when we leave off fighting our people and your people are free to mess together and may come and go to each other's quarters and hold conference together." Fugitives, suppliants, drummers and chariot-drivers were treated as non-combatants and not slain. Horsemen were expected to fight with horsemen, riders on elephants with riders on elephants, warriors in chariots with warriors in chariots, foot-men with foot-men. For a man to take up arms against another without first giving warning was deemed unfair; the use of a poisoned or barbed arrow was held to be against the laws of Manu; it was contrary to rule for a third person to interfere between two while engaged against each other in the actual fight. Quarter was given to women, to

soldiers who had lost their coats of mail, to those disarmed, or wounded or "terrified" or running away. To the modern substitute for *neutrality* as practised in Vedic times the "Convention of Geneva" is applied in token of its recent introduction as a result of very far advanced civilization. But to the principle of non-interference between two warriors while engaged against each other no modern name is applicable, the principle itself having been ages ago swept away in the onward march from *barbarism*. The wounded and the dead were left upon the field except in the comparatively rare instances of chiefs and men of special rank; these were removed from the field but by no means in every case; so we read that in some cases a guard was mounted over a wounded warrior as he lay upon the field, and so continued during seven days, at the end of which time death came to his rescue. According to the other principles of war, followed on the same occasion, an enemy when wounded was to be treated in the enemy's country or sent to his home.

The dead are said in some instances to have lain on the field unburied during eighteen days, at the end of which time, considering an Indian climate, birds and beasts of prey, little more than skeletons could have remained. The dead were burnt upon the field. The bodies of chiefs, being first wrapped in fine funeral cloths, were incinerated, their pyre composed of sandal and other odoriferous woods and sweet oils. The bodies of the ordinary classes were wrapped in cloths of coarser materials, their pyres composed of faggots and a commoner quality of oil. After a battle, carts were employed to convey burning materials for the above purposes to the field.

9. *Surgeons.*—On the occasion of the battle between Babhru-vahana of Manipura and his father Arjuna, when the latter was defeated, Chitrangada, the mother of the former, hearing that among the chieftains taken prisoners was Pradyumna,

son of Krishna, sent surgeons to dress their wounds, placed them in handsome apartments, and entertained them with food and sweetmeats ; in fact, established *ambulances* for them, as similar establishments of help are presently named.

Although the following instructions had reference chiefly to physicians, they are considered as more appropriate in this place as coming within the sphere of the army medical officer or surgeon, namely : "The duties of a physician, when a rajah travelled, was to point out the road, that is, route by which he was to proceed, also the water and shelter for the accompanying troops or followers and for the elephants. He should live near the rajah ; his care should extend to the water and food of the army as well as of the beasts of burthen which the enemy may endeavor to destroy by poison, and, it is added, the good physician may detect this, and be the means of saving the army." With regard however to the more immediate duties of a surgeon in war they appear to have been but slight in the time of the Ramayana ; thus Sushena, *physician* in the army of *Hanuman*, treated the troops who were wounded in the fight which led to the capture of Ravana in Lunka, that is Ceylon, by means of herbs which, having beaten and made into a paste, he then applied.

Susruta, like Machaon, appears to have in some measure at least performed and taught the duties of an army surgeon. Thus in the Ayur Veda, of which he is believed to have been the author, there are instructions with regard to the influence of the weather on health, on the regimen of patients suffering from surgical diseases, besides dissertations on the preparations required for accompanying a rajah in war, on the difference of climates, a description of fluids, and on different preparations and articles of food, besides a chapter on toxicology and one on intoxication, the whole, in fact, forming a compendium in which are included questions of sanitation which some so-called "Sanitary reformers" would have us

believe have only quite lately been enunciated by themselves for the first time in history.

10. *Hill Sanitaria.*—In the history of the early Aryan invasion of India a remarkable example occurs of the utilization of *hill stations* as a sanitary measure for troops. No doubt the story is to a great extent mythical, but like the majority of tales belonging to the same category, may have some degree of foundation in fact. Thus, then, it is stated that through the great heat a pestilence broke out among the troops of Dionysos while he occupied Upper India. To prevent the spreading of the pestilence Dionysos dispatched his soldiers from the plains to the hills, which were taken by force and held for this purpose. Here the soldiers recruited their health by the cool breezes and by the water that flowed fresh from the fountains.

Much later, in the time of Hiouen Thsang, some traces of such sanitaria seem to have still existed. An Indian army was stationed in these mountains, moving about here and there, while the soldiers were recruiting their health in these healthy parts. The inhabitants of the country—which is identical with the modern Afghanistan—wore felt garments, in summer they sought the cool of the mountains, and in winter dispersed themselves among the villages.

C. A. Gordon.

II.

ANTIQUITIES OF MĀMANDŪR IN NORTH ARCOT DISTRICT.

Six miles south of Conjeveram is the village of Māmandūr, in the Arcot Taluk of North Arcot, chiefly known in connection with its large and picturesque tank, which irrigates the lands of seventeen villages in addition to those of Māmandūr itself. From the surface of the level plain which forms the Taluk of Arcot, and extends into the neighbouring district of Chingleput, rises a small cluster of granite hills composed, for the most part, of boulders heaped upon one another in wild confusion. The principal elevations of this group have been linked together by an earthen rampart, and a large tank has thus been formed. From the surface of the waterspread, which, when the tank is full, covers about eight square miles, rise a number of rocky islets frequented during the cold season by flocks of water-fowl. The Vellore hills, with the Jewādies behind them, form a charming background in the distant west, and Māmandūr would be worth a visit on account of its natural beauties, even if it possessed no other attractions.

But what makes the place chiefly interesting is probably known but to a few: and a description of the antiquities to be found here may be found not uninteresting. They consist of rock-cut chambers, dolmens of a somewhat peculiar construction, and inscriptions upon rock and stone which are more or less ancient.

The rock-cut caves are four in number, each facing towards the east, and excavated in the face of the hills which support the bund of the tank upon its southern side. The two first reached from Conjeveram are within a few yards of one another and similar in size. The face of the rock having been cut perpendicularly, a narrow ledge has been formed, behind which the chambers stand, each having two pillars supporting the roof, and cut at the top into the form of corbels with a second and corresponding couple within. The dimensions of the chambers are 20 feet broad, by 10 feet deep, and 7 feet high, each pillar being 2 feet square.

The pillars of the first chamber are ornamented with lotus flowers cut in low relief, and in the middle of the rock behind them is a small doorway, 2 feet broad, leading into a cell about a yard square and 5 feet high, at the back of which stands a low ledge with a hollow in the centre, probably for the reception of an image. In the left hand side are the remains of an inscription in strange letters which are unknown to the learned of the neighbourhood, but which appear to be ancient Canarese (?). The face of the rock has either flaked or been broken off, so that the major portion of the inscription has been obliterated.

The other chamber has pillars without ornament of any sort, but it leads to three posterior cells similar to that already described. The space between the doorways has been divided into six panels, each containing a human figure 4 feet high, very roughly cut in relief. The two on the left clearly represent males, since they are bearded ; those in the middle seem intended for females, judging from the face, and head-dress arranged in large rolls on either side with a great pile above the crown. The remaining sculptures are clearly female, but all six are very roughly executed, neither fingers nor toes being delineated. Upon the side walls are inscriptions

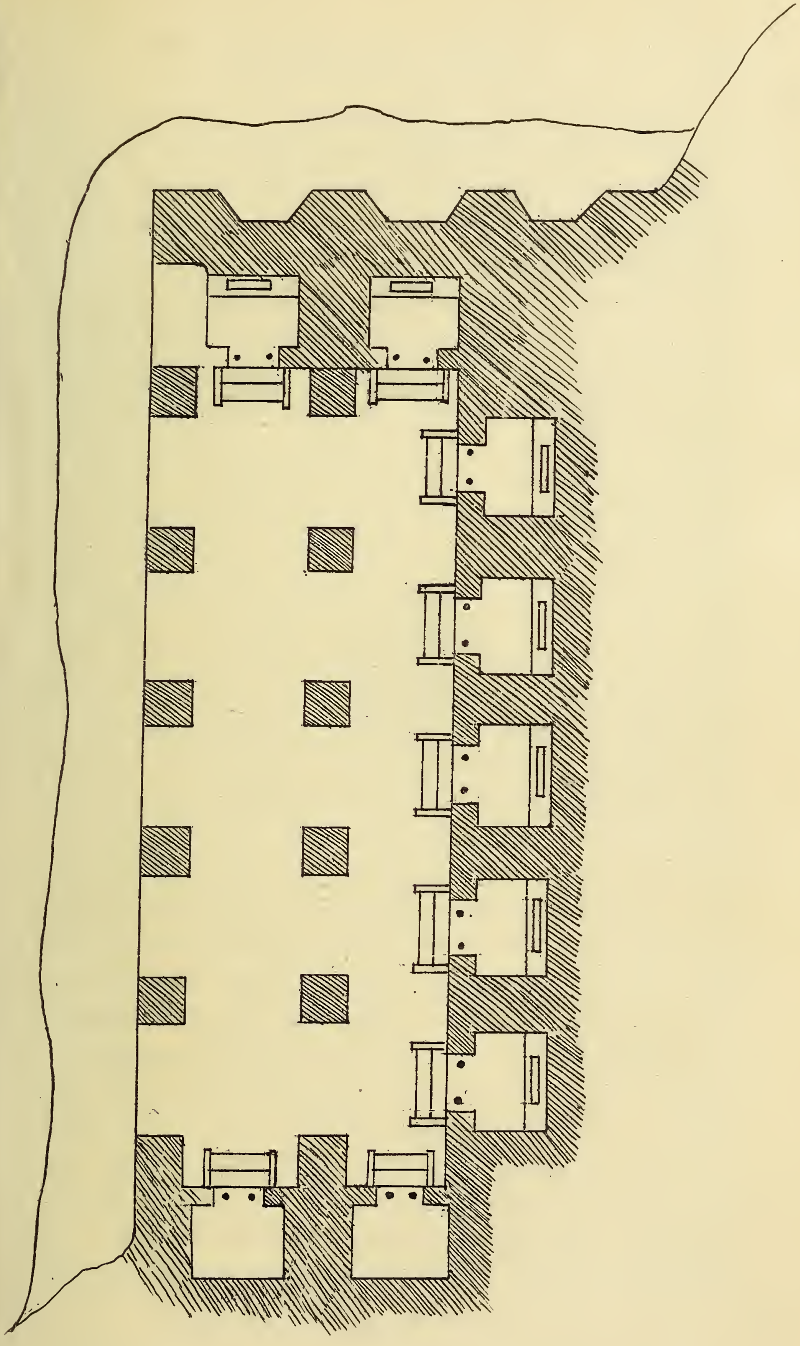
in Tamil and Grantham, mixed with a few unknown characters; but the sounds expressed by the known letters convey no meaning, although the Tamil word "Velakku" (light) occurs more than once. These seem more modern than the writing met with in the first chamber.

About a quarter of a mile further to the south occur the largest of the excavations, the plan of which is represented on a fly leaf.

It is constructed on the same principles as the smaller works, but has evidently never been finished, for a beginning has been made on the southern side of the rock to drive galleries to meet the interior corridors, and the walls have no inscriptions. As in the smaller halls, each doorway has a couple of steps leading up to it, and ornamental cornices are carved just above the floor and below the roof. On either side of the sill, hollows have been let into the stone with corresponding ones above, evidently for the purpose of fixing wooden doors.

The fourth excavation calls for little notice. It is on the same scale as the two first, and has never been completed.

All these caves are, by the people, attributed to the five Pāndavas and called the Pancha Pāndava Dēvals, but a very similar excavation five miles south-east of the town of Arcot, on a hill called the Pancha Pāndava malai, bears evidences of having been the work of Jains, for a representation of one of the objects of their worship is cut upon the rock just above the entrance, and other figures of the same kind occur elsewhere upon the hill. It may, therefore, be safely concluded that the Māmandūr caves owe their origin to the Jains, who are known to have flourished, many centuries ago, in Conjeveram and the country round it. In the taluks of Arcot and Wandiwash they are still numerous, but have no knowledge of their previous history, only retaining, in



BRITISH MUSEUM NATURAL HISTORY

common with the Brahmans, traditions of the cruel persecutions to which they were subjected by the latter. In the time of their prosperity the Māmandūr hills were doubtless the resort of a party of Jain monks, who occupied themselves in cutting out of the rock retreats, in which they might erect their idols, and apply themselves to worship and meditation protected from the sun and rain.

Leaving the caves, and returning northwards towards the village, the path leads among boulders fantastically arranged below the tank bund. At first sight there is nothing remarkable about their appearance, but a closer examination reveals the fact that many form those strange monumental sepulchres called cromlechs or dolmens, which are frequently found in Southern India. The ordinary dolmen is constructed of six flat quarried stones, forming a cubical chamber, and in the eastern wall is invariably cut a circular aperture about 18 inches in diameter. The specimens found at Māmandūr, however, have a character of their own. Many of them have fallen into ruin, but one close to the path is in a good state of preservation, and affords a good example of what all were. It is rectangular in shape, the dimensions of the enclosed chamber being 10 feet square, with a height above the soil of rather more than 3 feet. Excavation to a depth of 3 feet more failed to reach the flooring stone, and the rapid percolation of water from the adjacent paddy fields made further trial impossible. The roof is a gigantic mass of granite, evidently not quarried, measuring 12 feet each way with a thickness of a foot at the edges, and more than 2 feet in the middle. This enormous mass has been raised upon several upright stones, some 10 inches thick, which are buried in the soil to an unknown depth, and are roughly fitted one by the side of the other. No attempt has been made to shape them artificially that the joints may meet closely, but the numerous interstices

are filled with small stones mixed with clay or other soil. The wall upon the eastern side presents a door-like opening, about 20 inches wide, between the stones which close that side.

The other dolmens which are observable in this spot are generally smaller than the one described, but the great size and thickness of the roofing stone in each excites surprise and makes them even more wonderful than the ordinary structures of the kind in which the roof is made of a flat slab only 8 or 10 inches in thickness. Fine collections of the usual style of dolmens may be found three or four miles north-east of Chittūr in a valley near the village of Kalava-gunta, and again near Bâpanattam in the Palmanēr Taluk, in both of which places nearly a square mile of country is covered with these ancient sepulchres, arranged in parallel lines, and presenting the appearance of a deserted pigmy city.

Like the caves, the dolmens are, by the people, ascribed to the Pāndavas, being called Pāndava temples. Nothing appears to have been yet discovered regarding their origin, but it is a curious coincidence that the Kuruba shepherds, who are found in large numbers on the plateau, which forms the west of the North Arcot District, still erect dolmens upon a small scale. Their temples are surrounded by a low wall of stones enclosing a small extent of land covered with such monuments, constructed with only three walls and a roof each formed of a single flat stone. The fourth side is open instead of having another wall with the central aperture. They explain that upon the death of the head (Goudu) of any of their clans, one of these structures is raised, but not over the spot where his body is buried. It is merely a memento of him, and here offerings are made, and worship performed at intervals for the rest of his soul. The Kurubas are identical with the Kurumbas of the plain country, the home language of each being Canarese; and Conjeveram being

known to have been the capital of the Pallava rajahs, who were Kurumbas, it is perhaps not unlikely that the dolmens were the work of that people. Again, the Kurumbas of Conjeveram became converts to Buddhism, and had many monasteries at their capital, so that we may credit the same race with the various cuttings in rocks which are found in North Arcot and elsewhere. One temple of this kind now exists near Mēlpādy in the Chittūr Taluk, admitted locally to have been a Jain shrine, and proved to have been such by sculptures close to it. A sthalapurāṇam of the neighbourhood refers to a Korava (probably Kurumba) king as reigning in ancient times near Mēlpādy, which to some extent corroborates the suggestion that the Kurumbas were the authors of our rock cuttings.

The only other objects of interest at Māmandūr are four inscriptions. Three of these are upon stone slabs, now buried side by side in the tank bund. The upper lines being uncovered exhibit writing in Telugu, Grantham, and Dēvanāgarī, all clearly of no ancient date, and probably giving the name of the constructor of the tank, and the date. One Damal Venkatapati Naidu is popularly believed to have formed the bund, and called the tank Chennasāgaram, a name still attached to it. He is described as the same person who gave its name to Madras (Chennapatnam). If so, he must, of course, have been that Damerla Venkatapati Naidu, Rajah of Kālahasti, who, in 1639, ceded Madras to the Company, stipulating that it should be called after his father Chennappa Naidu, whose name he seems also to have attached to Māmandūr tank.

The last inscription is a very lengthy one, upon a great granite boulder near the base of one of the hills, and close to the water's edge, in the limits of the village of Dūsi, which lies north of Māmandūr. The rock is more than 20 feet long,

15 feet high, and 12 feet deep, and upon all sides of it are inscribed Tamil and Grantham characters intermixed. The language is Tamil and is easily understood, and the record relates to a grant of land, in S.S. 1505, to the head of a Math in Conjeveram by Sri Ranga Vira Maharajah Raghuvira, Rajah of Chandragiri, who styles himself "Lord of the universe and of the country which lies between the northern, southern, eastern, and western seas."

M. C. S.

III.

ON THE NAMES OF PLACES IN TANJORE.

The following list of place-names was collected during the camping season of 1877-78 whilst conducting the Madras Coast Series of the Great Trigonometrical Survey of India through the Tanjore District. My prime object was to find out by personal inquiry on the spot the correct vernacular form of all the names of places that I must submit to the Surveyor General for publication on the charts and records of the work. The list comprises, therefore, the names of all the survey stations, the topographical features of the ground mentioned in describing them, the surrounding villages, and the divisions of the district to which they belong. A few other names of interest met with are also included.[1]

The English seem peculiarly unhappy in their rendering of Indian proper names. Most of them would perhaps admit so much, but yet be quite averse to learn and adopt any system of transliteration or orthography by which alone the stigma may be removed. The earlier sheets of the engraved map of the country—the Indian Atlas—are covered with irregularities of orthography and mistakes, many of them misleading and often extremely ludicrous. Some of them are due to the ignorance of the engraver in London and the bad writing of the manuscript, but had there been any uniform or acknowledged system of orthography, the copyist might have detected

[1] The remarks and etymologies here offered must be regarded as crude suggestions by the way, and not as having any pretensions to scholarship or independent research. They are simply a desultory collection made by a travelling official in a certain locality, during a busy tour of a few months.

the errors or idiosyncrasies of the writer instead of perpetuating them, especially if he had possessed lists for reference, such as is here offered, only properly completed and corrected. The Government has now determined to adopt a system, and if it will adhere to it and carry it out consistently in all official publications and departments, the coming generation will fall into the way of it insensibly and with greater ease (?) than the present and past generations have enjoyed in acquiring the unsystematic practice hitherto current, so that we may now hope that the literature of the future will be free from the blunders and irregularities that now disgrace that of the past and so puzzle the new-comer and the foreigner. An attempt has been made in this paper to carry out the approved system of transliteration, but the first gazette of the Madras Government on the subject (dated 20th August 1878) was so lamentably defective that its application to Tamil names was very uncertain, and even the amended publication in a new and revised gazette leaves much to be desired.

Besides obtaining the correct form of each name and so helping to improve our maps, I thought that such a list as this might prove of some use to the gazetteer (compiler) and historical writer, and of interest to the traveller, the ethnological inquirer, the ordinary reader and writer, and most of all to the mapmaker; also to any one else curious in such matters, as throwing light on the history and circumstances of the inhabitants, on the physical features of the country they dwell in, the language they speak, and the race they belong to.

All proper names were, or were originally derived from, words or sounds having a meaning; but process of time and the long continued wear and tear of familiar use have rubbed off the corners that were rough to the tongue, and have run together the liquid parts that most easily coalesced. With the original form the meaning has also been lost,

and it is generally very difficult, often impossible, to discover them. Still local circumstances and traditions occasionally point to the true etymology whence the original form may be approximately reconstructed or fairly guessed at; but there is a very general impression that the tradition itself has been often invented to account for the name. It is not, therefore, to be supposed that the names here given and their etymology are correct; but they may be accepted as the current local usage and traditional explanation as given by the village elders questioned on the subject. Their answers were sometimes contradictory; some declaring the name had no root-meaning whatever, nor ever had any, but was simply the proper name which they and their forefathers had used from the very beginning; whilst others were as quick in giving a ready-made derivation or explanation of which several were frequently forthcoming for the same name. A few only here and there offered a reasonable origin, explaining the gradual corruptions and contractions that the name in question had undergone, and appealing to the authority of existing or well-known facts, or to history that could be consulted for confirmation. These were perhaps the modern instances upon which also further light was to be had from the Sanskrit name of the village temple or name of the local deity, to whom its chief shrine was dedicated, as told in the Sthalapurāṇa or local history.

The evidence of persons from adjacent villages was often taken, and the name itself was taken down in the vernacular (Tamil) on the spot in the handwriting of a resident who could write, usually the headman (Maniyakāran), the chief village officer (Munsif), or the village accountant (Kaṇakkappiḷḷai).

I have prefaced the list of place-names with a few general remarks upon the results I have arrived at, and have appended a classified tabular statement of the characteristic adjuncts of the proper names. This is followed by some notes on the

onomatology of the South Tanjore country beyond the Kāvēri delta, gathered from the lists that were made during my absence from India in 1876-77, and though I did not visit that part of the country myself, I have reason to believe they may be relied on as correct so far as they go.

Finally I have added a classified list of the common appellative adjuncts to the proper names of places usually met with in the Tamil country, with their signification so far as I have been able to learn it.

GENERAL REMARKS ON THE PLACE-NAMES FOUND IN THE KĀVĒRI DELTA, TANJORE.

From an inspection of the maps of the district and of the lists of place-names here given, the following facts may be gathered:—

I.—Topography.

Irrigation.

(1.) That the delta has many rivers and canals, by the frequency of the following adjuncts meaning river, canal, &c. :—āṛ or āṛu, kāl, kaṇṇi, vāykkāl, veṭṭāṛ.[2]

Cultivation.

(2.) That it is highly cultivated with rice fields, gardens, groves and plantations, by the following :—chey, kollai, marudūr, nellūr, pulam, pūṇḍi, tōppu, tōṭṭam, vanam, vayal, vēli.

Country flat.

(3.) That the country is low and flat, especially towards the sea, by the frequency of the following :—karai, kōṭṭagam, kuḷi, madugu, paḍugai, paḷḷam, paravai, vayal, veḷi.

Absence of hills and of mounds and rocks.

(4.) That there are no hills, mounds, or rocks, as shown by the general absence of names signifying hill, &c. :—achalam, giri, kuṇ(d)ṛu, malai, &c. ; also of kal, karaḍu, kunnam, mēḍu, pāṛai, parambu, teḍal, tiṭṭu, &c.

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[2] For the significations see pp. 87, 92.

(5.) That there is a remarkable absence of tanks and reservoirs in the deltaic portion of the country, these being generally quite unnecessary for irrigation on account of the numerous river channels and canals. This is shown by the absence of the following names meaning tank, reservoir, &c. :—ēndal, ēri, kammāy, kuḷam, kuṭṭai, samudram, taḍāgam, tāṅgal, ūruṇi.

Absence of artificial tanks and reservoirs for irrigation or storage.

There are many tanks in the towns, but few places are named from them.

II.—Population and Religion.

(1.) The presence and preponderance of Brahman influence in the best part of the district is shown by the following adjuncts :—agaram, agrāram, aiyan, īśvara, kōvil, maṅgalam, pāppān, Perumāl, puram, svāmi, Tiru. Also by the familiar Brahmanical proper names :—

Brahman prevalence.

*Chandra*pāḍi, *Harischandra*nadi, *Gōpāl*puram, *Kalyāaṇa*puram, *Kistnā*puram, (for *Kṛishna*puram,) *Kuttālam*, *Mahādēvi*-paṭṭanam, *Mahāliṅgam*, *Pāpanāśam* (or *Pāvavināśi*), *Perumāl*, *Pushpavanam*, *Raghunātha-puram*, *Rāmasvāmī*, *Rāmēśvaram* (also called Tiruva *Rāmēśvaram*), *Raṅganāthapuram*, *Somēśvarapuram*, *Śrīraṅgam*, *Teṅkāśi*, *Tirupālturai* *Tirupūvanam*, *Vēdāraṇyam*, many of which are to be found in the most fertile parts of Southern India, in the great river basins and deltas where the chief Brahman communities are found, in Tinnevelly and Madura, on the rivers Tāmraparṇī and Vaigai, as well as on the Kāvēri.

Hindu proper names.

(2.) A number of *cow*-names seem to point to a prevalence of a "*cowcult*;" a few of these are as follows :—Ātalaiyūr, Āvūr, Gōpālsamudram,[3] Kōmal, Kōvindaguḍi,[1] Kōvūr, Paṭṭīśvaran, (and ? Kōnūr).[3]

Cow-names.

(3.) A relic of the former prevalence of tree and serpent worship is to be found in a remarkable group of Nāga names, which runs in a line from Nāgūr and Nāgapaṭṭanam ("*Nagore*" and

Trace of tree and serpent worship.

[3] Some names should also be referred to Kṛishṇa, who is worshipped as a cowherd.—G. O.

Negapatam") on the coast as far inland as Trichinopoly. Nāgapaṭṭanam has only recently lost a last Buddhist or Jaina relic, in the removal by French Jesuits of the old so-called "Jain Pagoda."

Serpent names.

(4.) The serpent names are as follows:—Nāgai, Nāgakkuḍi, Nāgalūr,[4] Nāgalpūṇḍi,[4] Nāgamaṅgalam (bis), Nāganāthasāmi, Nāganti, Nāgapaṭṭanam, Nāgarasapuram, Nāgāttūr, Nāgēśvaram, and Nāgūr (bis), also Pāmani, Pāmbanōḍai, and Pannateru.

Sacred tree names.

(5.) The sacred tree names are:—*Ālaṅguḍi, Ālattūr, Araśūr, Atti-, Átti, Kaḍambūr, Tolaśaipaṭṭanam, Vannipaṭṭu, Vēmbuguḍi, and Vilvanūr, &c., &c.*

Local religion.

(6.) The religion of the masses of the people is shown in the following:—Aiyanār, Amman, Kāli, Kāttān, Kāṭṭēri, Māri, Nāga, Perumāl, Piḍāri, Pillaiyār, Śāttan, Śivan; but there is an apparent absence of the devil (Pēy) worship that is common amongst the lowest tribes of the south, the Śāṇārs for instance. Asura, Rākshasa, Piśācha have been banished by a higher civilization.

III.—Common Place-names.

Common village names.

(7.) The village names of common folk are not peculiar to Tanjore, but are much the same as in the adjacent districts, the commonest are—Chēri, Kuḍi, Paṭṭu, Pēṭṭai, ūr, veḷi, &c.

Absence of the military classes.

(8.) The preponderance of an agricultural over a military population is shown by the absence of Kōṭṭai (Fort) and Pāḷayam (Fief), which are only or chiefly found outside the delta.

Nāyakkan and Rāja names are scarce but Araśa is common.

Absence of wild tribes.

(9.) The absence of wild aboriginal and pastoral tribes is shown by the absence of their names so common in the adjacent provinces, such as Iḍaiyan, Kaḍaiyan. Kuṛumban, Kuṛavan, Oṭṭan, Paṛaiyan, Paravan, Valaiyan, Vēḍan, &c.

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[4] These names may perhaps be traced to the Tamil *Nāṅgal*, a plough.—G. O.

(10.) The "Paṭṭanam," which was so frequent on the shore of Palk's Bay to the south of Point *Calimere* (Kaḷḷimēḍ) has given way to Paṭṭanachēri and Paṭṭachēri or Paṭṭichēri, which is a very common name for a village on the coast of the Kāvēri delta for 40 or 50 miles to the north of Kaḷḷimēḍ. On the north of the Kolladam the commonest name for a fishing village on the coast is -kuppam, which again is succeeded north of the Pālār by pākkam.

Coast names.

IV.—Particular Names.

(11.) Names of historic interest or remarkable proper names that occur also in other places, besides those under former headings are: Būdalūr and Būdanūr (otherwise Pūtalūr and Pūtanūr), Chōḷapuram, Kāṅgaiyan, Koṛkkai, Mannārguḍi, Musiri, Orattūr, Ōriyūr (or Ūṛaiyūr), Perambūr, Shōranūr, Talakāḍ, Tirupattūr, Tiruvellūr, Tuvaraṅkurichi and Vēllūṛ.

(12.) A score or two of proper names given below were found which appear to be those of ruling princes, mostly Chōḷa names, but a few Pāṇḍiyan, Nāyakkan and others occur:—

Dynastic proper names.

Achuthapuram (Nāyakkan), Ādivīrarāmapaṭṭanam, Ānanda-Kāvēri, Chōḷanpēṭṭai, Chōḷapuram, Chōḷa Suḍāmaniyāṛ, Dīvukōṭṭai (for Dīvikōṭṭai), Gaṅgaikoṇḍa, Gōpālasamudram, Gōpārājapuram, Harischandranadi, Jayaṅkoṇḍachōḷapuram, Kāḍuveṭṭi, Kalyāṇapuram, Kannānāṛ, Kīrttimān, Koḍamūrtti, Kolluvanāṛu, Koṅgarāyan (? Chōḷan), Kuttanāṛu, Mannankoṇḍānāṛ, Mannārguḍi, Muḍikoṇḍānāṛ, Narasiṅgampēṭṭai, Nārāyanvāykkāl (Chōḷan), Pāṇḍuvaiyāru, Perumpāṇḍi, Pillaivāykkāl, Ponaikoṇḍān, Raghunātha Kāvēri, Rāja Gōpālpuram, Rājēndra, Raṅganāthapuram, Rārāmuttiraikōṭṭai, Sevaganāṛ, Śōlavanāṛ, Tirumalairājan, Tirumalasamudram, Tirumalavāsal, Vennāṛ, Vikramānāṛ, Vināyakkan, Vīramaṅgaḷam, Vīraśōḷanaṛ, Yaḍaiyāṛ, Yādavaguḍi, Yānāthaṅguḍi.

(13.) Orattūr (pronounced Oratthūru) is found repeatedly in this and the adjacent districts, and may represent the "Orthura" of ancient geographers, for which Colonel Yule's Map of Ancient India

Identification of ancient and modern place-names.

gives *Ureiyūr*, and Professor Lassen's *Wadiūr.* Paṭṭukōṭṭai, and-paṭṭu perhaps represent the ancient "Batæ" of Yule's map; paṭṭi is very frequent also in the same neighbourhood. Āṟṟaṅkarai (pronounced now-a-days Ātraṅkarai) at the mouth of the Vaigai looks very like the ancient "*Argari*," and "*Sinus Argalicus*" (Yule), the Argaric Gulf.

Ancient.	*Modern.*
Orthura.	Orattūr.
Batæ.	Paṭṭu or Paṭṭi.
Argari.	Āṟṟankarai.
Korula.	(Several).
Arembur.	Arambaūr.
Saburas.	Sāvūr.
Abur.	Āvūr.
Thellyr.	Tillai. Thalūr. Tellūr *several.*
Talara.	Tellār. Tillārampaṭṭu.

Ptolemy has (Ἀγχειρουπόλις) which may have been the "*city of the Anaikarai*," *the causeway* (Adam's bridge).

Kurla or Koralai-gorla, &c., on the East Coast may represent the ancient Korula. There is "*Gorla*pālem" near Nizāmpaṭṭanam (cf. *Vingorla*, South Conkan, Malabar Coast).

A marginal list is given.

V.—Natural Productions.

The vegetable kingdom is well represented by the following, some of which recall the tree-worshipping propensities of the followers of the Buddha:—

Flora.

(1.) Āl banyan, araśu pipal, atti fig, āvārai, avuri indigo, elumichai lemon, īcham date, ilavam, illupai, iñji ginger, kāchān, karumbu sugarcane, kattiri eggplant, mā mango, mañjal turmeric, nāval, nel rice, nunna, pālai, panai palmyra, parutti cotton plant, pirambu cane, puḷi tamarind, tāmarai lotus, tennai cocoanut, tolasi tulsi, tuvarai lentil, vanni, vēlam thorn, vēmbu nīm-tree, viḷā cratæva-religiosa, vilvam Bēl, Bael.

Fauna.

(2.) The animal kingdom is but scantily represented; but in the populous and cultivated delta there is no room or encouragement for any wild animals. The only wild animals commonly noticed are monkeys, mongoose, rats, jackals, and lizards; these, with a few birds and snakes, nearly complete the existing fauna, except the spotted deer and antelope, only found near Point Calimere on the coast. The following were, however, found in the place-names:—

Ā cow, āḍu sheep, ānai elephant, erumai buffalo, kapi monkey, karaiyān whiteant, kō cow, kokku crane, mān deer, mayil peacock, nāg snake, nari, fox or jackal, puli tiger, and pūnai cat.

Conclusion.

(3.) The chief fact learnt from a cursory study of the onomatology of the Kāvēri delta appears to be the universal influence of Brahmanical civilization upon an industrious agricultural population of indigenous origin. Śiva worship seems to be the religion of the majority, but there is a very large admixture of demonolatrous superstition. Īśvara (in combination -ēśvar) so common in South Indian place-names is the same as, and the common name for, Śiva, and is usually found in the names of his temples, or those of the presiding deities in whose form or under whose name he is there worshipped.

TANJORE PLACE-NAMES.

Place-names met with mostly in the Kāvēri Delta and Tanjore District.

Achuthapuram ..	A second name of Sāliamaṅgalam, after Atchuthappa Nāyakar (king) of Tanjore.
Aḍaiyār	'*Choked river.*' Fr. aḍai to be choked, as a river by sand: cf. The '*Adyar*' River, Madras; adaippu, obstruction.
Ativīrarāmapaṭṭanam on the Argaric Gulf.	'Adrampatam' of Ind. Atlas Sheet No. 80 = Ati-Vīra-Rāma's town, or seaport town; Ati-Vīra-Rāma (Great-Hero-Rāma) one of the Paṇḍiyan princes of Madura; situate at the head of Palk's Bay, the Argaric gulf (Sinus Argalicus) so named perhaps from Āṯṟaṅkarai (āṟṟaṅkarai) the 'Αγχειρουπόλις of Ptolemy, at the mouth of the Vaigai river. 'Αγχείρου however looks like Aṇaikarai, the ancient name of Adam's Bridge, so called by the Tamils as being the bridge or causeway *par excellence*. The early Arab voyagers called it (and the country beyond and about it) Ma'abar which in Arabic signifies ferry, ford, passage = "*The Straits*" as we should say. In the middle ages, before Pāmban was separated from the main land by the storm that breached the famous causeway, there is said to have been a great city, remains of which are still to be seen on the spit of sand opposite to Pāmban.

Āḍuturai	'*Audathoray*' of A.S. 79 = '*Sheep-ford,*' at the passage of the two river-channels 8 miles N.E. of Kumbhakōṇam, from āḍu sheep, and turai (q.v.) a ford, passage or resort.
Agaram [5] or Akāram ..	A common form of agraharam in Tanjore, which the Tamils cannot pronounce properly; a street, or village, of Brahmans; also a dwelling, mansion, place.
Agaraputtūr	Agra-pudu-ūr = *chief-new-town.*
Āgasaveḷi	Fr. Āgāsam, the sky, air, and veḷi the air, the open (= *the open air*), a plain, desert.
Agrāram	For S. agrahāram, a royal gift of land to Brahmans; a Brahman village or street. Having no aspirate the Tamil form is akkirakāram.
Akarāttūr	*Prime Āttūr ;* āttūr is a frequent place-name in S.E. India, commonly applied to a village by a river āṟ or āṟu; in combination āṟ becomes āṭṭ as Āttaṅkarai = *river side.*
Ālaṅguḍi	'*Banyan-habitation;*' āl the *Ficus Indica* or *Bengalensis,* and kuḍi a dwelling. This is one of the commonest place-names in Tanjore. Brahmans derive the name from ālam the deadly poison which arose at the mythical churning of the milk-ocean and was swallowed by Siva. The Tamil poet Kālamēghan in a complimentary verse on the Ālaṅguḍi Temple styles Siva Ālaṅkuḍiyan = '*poison-drinker.*'
Aḷasiguḍi	? '*Gift-hamlet,*' Sans. name Upadānapura. The land was a gratuitous endowment for a Siva Temple built by a Chōḷa prince.
Ālattūr	*Banyan (tree) village.* The ālai-maram is the *Ficus Indica* or *f. Bengalensis. See* Ālaṅguḍi.
Aḷavēli	From aḷam a salt field or marsh, and vēli means a wall, hedge, a certain quantity (about 5 acres) of land; with aḷam, salt, &c., compare Gr. ἅλς the salt sea, sal = salt, and *alum.*
Amaravatham	Vulgar usage for Amarapakam, or more fully Amarapāgatteruvu, a small village street, or hamlet near Mannārguḍi.
Āmbaḷāpaṭṭu	? from āmbal = lotus, and paṭṭu (q.v.) a place.
Ammaṅguḍi	'*goddess-abode*' = Hind. Dēvighar.
Ammāpēṭṭai	a town and railway station 10 miles E. of Tanjore; said to have been formerly called Ammāl-patthu = '*Lady-ville,*' or Ammā-kōvil-pattu = Goddess-Churchtown. It is the *Ammapatta* of A.S. 79. This pattu being for paṟṟu = patt(r)u a parish. Pēṭṭai means *bazaar, market,* &c.
Aṇai-karai	= '*Weir-bank;*' a common term in the S. districts for an aṇaikat (Anglice) *anicut*: aṇai = an artificial bank, dam, *bund*; karai = a (natural) bank, shore.

[5] Perhaps connected with Sanskrit *ajira,* ager, or even with nagara.—G.O.

Aṇai-koṭṭam	'*Anacootum*' of A.S. 79. Koṭṭam = stall? *The cattle-sheds at the bund.*
Aṅgarāyanallūr ..	Aṅgarāya's Nallūr = '*good-ville.*' *Aṅgaranulloor* of A.S. 79.
Annavāśal	'*Food-port*;' anna boiled rice, and vāśal a gateway, entrance, or *port*; a place where food is distributed in charity; often named anna-chattram and anna-sālai; also annakuppam.
Aṛa-kaṭṭaḷai	'*charitable endowment*,' from aṛam = charity, and kaṭṭaḷai a grant, order.
Araśalāṛ	Arasilaiyāṛ; the large river channel of the Kāvēri, close to Kumbakōṇam on the S. side
Araśa-paṭṭu	'*Royal place*;' or *Pipal village*, from Arasu the Pipal or Royal tree: cf. Tel. Rāyicheṭṭu or Rāgimānu.
Araśūr	= '*Kingston.*' This is another name of the Royal Mannārguḍi 10 miles S.W. of Chidambaram, to distinguish it from Mannārguḍi (the '*Munardoody*' of A.S. 79), a few miles distant. The other two places called Mannārguḍi, 40 miles S., are distinguished as Rāja-Mannārguḍi, and Kāṭṭu-Mannārguḍi, or *Royal* and *Wild* Mannārguḍi.
Āṛkāḍ or Āṛukāḍu, Anglice *Arcot* ..	= Six forests (poet. Saṭāraniyam); the abode of six Rishis in old times. There are several places of this name in Tanjore and South Arcot besides the town of 'Arcot' near 'Vellore' ('Αρκατ..ῦ βασίλειον Σῶρα). One of these would correspond better than that with Harkātu of Ibn Batuta who reached it the first evening of his march inland after landing from Ceylon apparently on the shallow coast of Madura or Tanjore (fourteenth century).
Arittuvārimaṅgalam ..	arittu = 'green,' and vāri a water-course; the '*Aratavaramangalam*' of A.S. 79.
Āruśutti-paṭṭu ..	The '*Acherdupat*' of A.S. 79. It may mean *River-embraced paṭṭu* (but Ārusutti is also a title amongst the Kallar tribe).
Āttanūr and Āttūr ..	'*River-village.*' Āttūr is a common form from āṛu a river, which becomes ātt- or ātr- in combination as in Āttaṅguḍi = *River-hamlet*, and Āttankarai = *River-bank*. Āttūr in Māyavaram Tāluk has also a Sanskrit name, Nadipura = *River-town*.
Avaḷivainallūr ..	'*It is she*'-Nallūr. A legend to account for this name is told of a man hesitating to accept his espoused bride until supernaturally informed that she was the right person.
Āvūr	'*Cow-ville*,' a decayed town 5 miles S.W. of Kumbakōṇam with a temple and a long legend about a cow (a). May not this be the ancient Abur of the map of Ancient India in Smith's Classical Atlas? Colonel Yule suggests Amboor: but this Āvūr seems nearer, and if not this there are several places in South Arcot named Āmūr.

Āyiṅguḍi	Aiyaṅgār's (*Ayengar's*) abode. Vaishṇava Brahmans are called Ayyaṅgār (prop. Aiyaṅgār), whereas Saiva Brahmans are called Ayyar (prop. Aiyar). Aiyan = Father, elder, preceptor, &c.
Ayyāvāḍi	Pastor's enclosure, or garden. Āyan a herdsman, *Cow-keeper*, ? from ā a cow.
-bākam or-bākkam ..	(in combination) for pākkam (cf. pakkam, a side = Sax. '*bord*' Eng. (*sea*) *board;* a common affix to places in the seaboard districts near to, and south of, Madras. Cf. S. bhāga a share, lot, division, also H. bāgam a cultivated place (? Per. bāgh). *See* Pākkam.
Bōvanagiri (Bhuvanagiri.)	name of a town on the Vellār river, near Chidambaram.
Būdalūr or more correctly Pūsalūr.	There are several places of this name in Tanjore and in other parts of S. India; ? = '*Worship town*,' from pūsal adorning an idol *in worship*; pūsi to offer (pū) *flowers*; pūchu Tam. = anointing cf. Hind. pūja = worship (Tam. pūsal = battle). Pūdanūr is common and seems to be another form of this name. The Tam. pūsu means daub, smear, anoint, adorn.
"Calimere"	*See* Kallimēḍu.
"Cārical"	properly Kāraikkāl, the French Coast Town between Tranquebar and Negapatam. There are several places with the prefix Kārai on the S. India coasts; Kāraikōṭṭai, Kārai-kurichi; Kāraikāl might mean 'Masonry (chunam) channel.' One of the Chōḷa princes was named Karikāla.
Chaḍaiyappār	*Shaggy lord, Lord matted-locks*; an epithet of Siva.
Chelambaram or Chellumbrum.	Anglo-Indian usage for Chidambaram, q.v. Natives also miscall it *Śittambalam.*
Cheṅgāḍ(u) .. .. Cheṅgāṭṭaṅkuḍi ..	'Red wold,' 'Bloody field,' a common name in the Tamil country; applied to a place sacred to Śiva: from se, sen, red, and kāḍu forest, grove, &c. This god loves the color red (? Sanguis).
Chēri	The *Shory* of A.S. 79 which also has another, *Shorey;* chēri ([6]) means a village, street, hamlet, &c., from a root meaning *collection, assemblage,* &c.
Chidambaram	The town between the Vellār and Kolladam (*Coleroon*) rivers, with the famous ancient temple of Śiva, commonly called by the English '*Chellumbrum* fr. chit = wisdom, and ambara horizon, sky; = *Heaven of wisdom.* Tillai, or Tillaivanam is the former name of this place, and it is familiarly known as Tillai even now amongst the natives. ? May not this be the ancient Thellyr and ? θελχείρ of Ptolemy and the ancient geographers. But perhaps Tellūr (near Vandavāsi) may be it.

[6] Chēri = Kēri; perhaps Sanskrit Kshētra or Khēṭa.—G.O.

Chī-piliyūr	Fr. Sī for Sans. Srī *holy*, and pili or puli a tiger. There is a legend of a tiger having done worship to the deity (Siva) here. Vyāghrapāda = 'Tigerfooted' is the name of the original Rishi of Chidambaram.
Chōḷattaram	The '*Thennet Solatrum*' of A.S. 79 = *Chōla-land;* taram may be for tarai *land*, or shortened from Sthalam a *place*, *station*; thus Tam. taram = talam = sthalam. The initial *S* is very usually dropped, as in thāna for sthāna, and many others. Cf. Lat. *tellus* and *terra*. The '*Thennet*' is unexplained unless it be for Ten-chōḷa-taram = Southern-Chōḷa-land. It is south of the Vellār river and there are signs of a town having existed in the vicinity formerly.
Dēvanapaṭṭanam "Tevenapatam" "Tegnapatam" "Thevanapatam"	The name of Fort St. David (Welsh *Davy*) "Cuddalore," is perhaps from the early English names of this place. There are traditions of a great seaport town having formerly existed near this place called Dēvanapaṭṭanam or Dēvanāmp. for Dēvanāyagan-paṭṭanam.
Dēvanūr	'*Godston.*' Tēvan is a common title amongst the Maravar tribe, and is frequently assumed by the Rajahs, Nayaks, and Poligars of South India.
Dēvikōṭṭai	At mouth of Kolladam river, ? a mistake for Dīvu or Tīvukōṭṭai, but there is Dēvipaṭṭanam on the coast, and Chōḷama*dēvi* inland.
Dīvukōṭṭai	'*Isle fort.*' Dīvu or tīvu is the Tamil form of the Sans. dvipa an island (dvi + ap two waters, cf. do-āb, land between two rivers); this name indicates a delta formation at the mouth of the Kolladam river.
-ēri	a big irrigation tank, or reservoir; a sheet of water; a common affix; ērpu = ascent; ēṇi a ladder; ēnthal = highness, &c. also applied to a tank, same as tāṅgal a pond, or *tank* fr. tāṅgu support, bear up, &c. Also cf. ēṟṟu (ēttru) = raise, lift, and ēṟṟam (vulg. yēttam) a water lift = Tel. ētamu; and ettu = lift, height, &c. Kan. ēri a tank bund, fr. ēru ascend, rise. Tam. ēr = plough (Lat. arare to plough, raise by tillage), ? because it raises the soil, Gr. ἀρόω, cf. Gr. αἴρω = I raise, lift up, bear, &c., Lat. orior,-ire. Ēri = water retained at a high level.
Erumai-paḍugai	'*Buffalo flat.*' The '*Arumapudda*' of A.S. 79 from Erumai a buffalo, and paḍugai, a low lying tract near a river or tank, where the cattle are collected after grazing.
Ervāḍi	? 'cattle pen' or "dungyard;" fr. eru cattle (cf. erumai = buffalo), or eru manure, cowdung; and vāḍi enclosure, yard.
Gaṇḍarakōṭṭai	for Gandharva Kōṭṭai. The Gandharvas were demigods, celestial bards, who defeated the Nāgas, q.v. The name of a small estate of a Telugu Zamindār, S. of Tanjore, in the vicinity of the numerous Nāga places mentioned.

Gaṅgai-koṇḍa-chōḷa-puram.	= *City of Gaṅgai-koṇḍa chola,* now called Gaṅgai-kōṇḍapuram '*Water got town.*' A decayed place with a grand old Śiva temple, going to ruin. It is like the Great Temple at Tanjore, perhaps grander; is said to have been the capital of a Chōḷa king? Gangakoṇḍa Chōḷa.
Gōpāl-samudram ..	= *Cowherd's lāke.*—The name Gōpāl occurs several times. *See* Samuttiram.
Gōvindaguḍi	one of a cluster of cow-names, near Āvūr (cow town). An explanation offered at the place was that a sacred cow (gō) strayed there (vanda = *came*): but the name Gōvind occurs again once or twice in the district.
Gūḍalūr	'*Cuddalore*' of the English residents. Kūḍalūr means '*Meeting town,*' being at the confluence of the Geḍilam or Gaḍilam and Paravanār rivers with each other and the sea. It is a common name in S. India; there are several in Tanjore of less note. Kūḍal, or Kūḍali, is a common name for a town at the confluence of two rivers: as for instance Kūḍalai-āttūr, at the junction of the Maṇimuktāṛ with the Vellāṛ.
Iḷaṅ-kāḍu	Iḷaiya, Iḷa = young, and Kāḍu = wood, jungle: several instances. Sans. name Bālavanam, both mean 'young wood.' The Government official name of one is Rājagiri, but there are several.
Inippiriyāvaṭṭam ..	'Eneepeereavallam' of A.S. 79. *See* Vaṭṭam.
Iñji-kollai	'*Green ginger field.*'
-iruppu	a residence, abode, dwelling; a common suffix, as in Kuḍiyiruppu = dwelling house, habitation; a hamlet: from iru sit, be, remain.
Jayaṅkoṇḍachōḷapuram or Jaiyankaṇḍachōḷa-puram.	'*Jahenkoodaśolapuram*' of A.S. 79. The town of Jayaṅkoṇḍa-Chōḷa, a tāluk town in N.E. Trichinopoly. There are some old Jaina images here: one called Paḷappār (Pazhappār) still respected by a few *Savunar* folk.
Kāchāñ paḷḷam.. ..	Kāchā-hollow, or dale. The Kāchā shrub, Memecylon tinctorium, grows wild freely in South India and fills the jungles. Kāchān-bākkam, K. kāḍ, K. kōttai, K. kurichi, &c. are common in South Arcot District and on the borders of Tanjore.
Kaḍagam	= 'a bracelet,' 'ring;' another village is called Kāppūr from Kāppur a *bangle.*
Kaḍalaṅguḍi	From kaḍal the sea, several places so called from the sea having formerly reached them in a storm; though now some distance inland.
Kaḍambūr	From Kaḍambu a flowering tree (? *Eugenia racemosa*) sacred to the god Skanda.
Kāḍu	A wilderness, jungle, untilled field, thicket, wild, forest; Arkkāḍu (*Arcot*); as prefix Kāṭṭu, Kāṭṭu Mannārguḍi, Kāḍuveṭṭān, &c. (q.v.) Kāḍu is rare in the delta but common beyond. For deri-

Kāḍu—(*Continued*). ..	vation compare kā a grove, as in Pūṅkā = Flower garden, Tiruvānaikā = saint elephant grove, at Trichinopoly; anc. Tam. and anc. Mal. kānam = forest, jungle; Koḍi-kānal = creeper-wood (Palanihills); kā also means a pole, beam, whence kāvaḍi a shoulder pole, for carriers, (*kahār*). In Kan. (W. Mysore) kān = a wood, evergreen forest, and on Malabar coast kāvu or kāu = a garden, sacred enclosure or grove: perhaps from Rt. kā = guard, whence kāval = watch, ward (Laṭ. caveo). Kāḍu is applied to a scattered collection of things; as, kuḍikkāḍu (grove of huts) a hamlet; neruppukkāḍu a conflagration (a forest of flame); Veḷḷakkāḍu a general flood.
Kāḍuveṭṭan kurichi ..	= ('*Forest-cleared hamlet*'). Veṭṭu = cut, dig, strike, &c. *See* Kurichi. Kāḍuveṭṭi was a title of one of the Chōḷa princes.
Kaḷañchēri	'*Threshing-floor-village.*' Kaḷam means a threshing floor, also a battle field. In the Kāvēri delta the threshing floor is the only dry spot to be found in the irrigated parts very often, and is usually the best site for a new hamlet.
Kaḷañjimēḍ	For Kāḷāñji-mēḍu = Mushroom-(or fungus—) mound.
Kallaṅkaṛai	'Stony bank.' The name of an old gravel bund or dyke some miles in length north of the Kolladam.
Kaḷapāḷagaram ..	'Cullapaulgurram' of A.S. 79, near Kumbhakōṇam. Cf. '*Gullapaul*' near Tirutarapūṇḍi; *see* next.
Kaḷapālīśvaran	'Kalaplisperi' of A.S. 79 (*see* preceding). The idol is said to be allotted a kaḷam measure of milk (pāl) daily.
Kaḷḷanpūṇḍi	'Kaḷḷan's Grove.' The Kaḷḷans were a lawless tribe of borderers between the Trichinopoly, Madura, and Tanjore Districts. Kaḷḷan is synonymous with *thief* in Tamil (S. chala = fraud. Lat. clepo, κλέπτειν.)
Kaḷḷimēḍ	(Point 'Callimere') = Cactus (*Euphorbia*) mound; but none there now. It is commonly called (locally) Kōḍikarai = '*Point Shore.*' It is supposed to be the "Kalligicum" Promontory of ancient geographers. Pliny gives Calingon. It is sometimes written and pronounced Kaḷḷimōḍ(u) (angl. Kallimōr, as in Nagari-mōr the Nagari Nose, or hill peak, near Madras). Rāma is said to have attempted to make a causeway hence into Laṅka (Ceylon), and the Rāmasāmi-pādam-maṇḍapam is said still to mark his footsteps (pādam).
Kambaiyanattam ..	Kambaiyan is one of the many titles amongst the Kaḷḷars; nattam = a settlement, village, or plantation, from naḍu = plant, set.
Kaṇḍa or kaṇḍan ..	in combination in placenames means 'saw,' 'met with.' *See* Koṇḍān.

8

Kaṇḍutan paṭṭu ..	*See* Paṭṭu.
Kāṅgaiyaṅ Kuṟichi ..	There are several places named Kāṅgaiyan. Kāṅgayam was one of the seats of the Chera Kingdom near Coimbatore. Kāṅgaiyam = gold.
Kannāṉār	? Kannan's (river)-channel. A watercourse S.S.E. of the delta.
Kaṇṇi	A small channel for irrigation purposes, a *canal* channel; cf. Eng. *kennel* a *channel.* Sans. Khan = *dig*, *excavate.*
Kapistalam	(on the Kāvēri) *monkey place*, from Sans. Kapi (Gr. κῆπος) an *ape*; and sthalam a station, place.
Kaṟaiyānpaṭṭi	'*White-ant hamlet*,' from Karaiyān white-ants; and paṭṭi a fold, a village of herdsmen. Karaiyān [7] is a rather common prefix S. of the Kāvēri Delta.
Kārakkōṭṭai	from Kārai mortar, paste, cement? = '*masonry fort.*'
Kārakkuṟichi	? '*Masonry hamlet.*'
Kāraikāl	*See* 'Cārikāl.' The French town on the Coromandel coast (Chōṟamaṇḍalam) between Tranquebar and Negapatam; ? from Kārai = masonry, and kāl a channel; but there seems to have been a Chōla prince of this name.
Karaimēḍu	'*Shore mound*,' from Karai a shore, bank, &c., and mēḍu a mound.
Karuppūr	or Karpūr, there are several places of this name in Tanjore; said to be so named from a legend of certain Rishi's wives having been seduced by Śiva. Karu signifies *pregnancy*; also a magical preparation to fascinate or injure a person. Perhaps "*shrine town*" from S. Garbha (Tam. Karuppam) a shrine, womb.
Kastūriyammāl ..	'*Musk-lady*,' The name of a Tanjore Rajah's wife or mistress, to whom this place was granted. Grants made to courtesans are common; seven were mentioned on the road from Tanjore to Mannārguḍi. Ammāl = lady, mother, goddess.
Kaṭṭaḷai	pronounced and sometimes written kaṭ'ḷai, ? a grant. It ordinarily signifies an order, charge, appointment; a (brick) mould; but is commonly applied in Tanjore to a certain plot of land (? '*messuage*'). 5 or 6 miles E. of Kumbhakōṇam there are, or once were, 7 places called Kaṭṭaḷai, distinguished as first, second, &c. Mūdal, Reṇḍān, Mūnān-, Nālān-, Āṟān, and Ēḻān-, or seventh kaṭṭaḷai assigned for the seven services of the great temple.
Kattirinattam	'*Brinjāl plantation*;' kattari the egg plant, *Solanum melongena.*
Kāṭṭu-Mannārguḍi ..	'*Jungle-Mannārgudi*,' to distinguish it from Rāja-Mannārguḍi.

[7] Karaiyán = a man of a shore-dwelling tribe; but these places are not now on the coast.

Kāvēri	The '*Cauvery*' River, the most sacred river of Southern India; from Tam. Kāvi *Red-ochre*, and ēri a sheet of water: cf. Tel. ēru a river; = '*red river*'; otherwise '*Wood-water*' from Kāvu a grove. It is also named Kāka nadi, ? *Crow-stream*, from a fable of a crow (kāka) having upset the water jar of the Rishi, Agastya Muni; and this recalls Kumbha-kōṇam = '*Jar brim*,' which may have reference to this fable. Another story makes it *Saint Kāvēri*, daughter of Kavēra Muni, who was allowed to become a holy river in order to do good to men; all perhaps mere priests' inventions, to enhance the sanctity of the river and their own importance. (*See* next.)
Kāvēri-paṭṭanam "Cauvareypatam *or* *Keelaur*" of A.S. 79.	'Chaberis Emporium' of Ptolemy. The port at the river mouth has also been named Kāvēri-pūm-paṭṭanam, ? for K.-*pogum*-patm. = '*Kāvēri-passagetown*.' The three great islands in this river are all named after Vishnu, viz., Śrīrangam at Trichinopoly; Madhya-Ranga, now commonly called Śivasamudram between the two great *Cauvery* water-falls, and Śrīrangapaṭṭana (*Seringapatam*) in Mysore. Kīḷāṛ = *East-bourne*; 2,000 years ago this may have been the principal mouth of the river; now there is scarcely any channel at all.
Kīrttimān	The name of one of the great river-channels of Tanjore, so named perhaps from some prince's title kīrti = fame, glory, &c., and mān a prince, &c. Cf. Cheramān, Toṇḍamān.
Kīvalūr	....
Koḍaivāśal	'*Bounty-port*,' '*Charity-place*' like Annavāśal: koḍu = give.
Kōdali-karuppūr ..	On the north of the Kolladam.
Kōḍamangalam ..	(Compare Koḍaivāsal) ? = *Charity-mangalam*.
Kōdaṇḍaviḷāgam ..	'*Battle field of the bow*.' Kōdanda Sans. a bow, arc, &c., from Sans. root kuṭ to be bent, crooked. Viḷāgam is a rather common affix in Tanjore. Vilāsam = sport, dalliance.
Koḷḷaḍam or Kolliḍam.	The 'Coleroon' River, being the northern arm of the Kāvēri river running along the N. edge of the delta; the derivation given is Kol-iḍam or Kolai-y-iḍam = 'slaughter-place,' from a legend that men were sacrificed or cast into a breach in the river bank in order to stop it; but compare also kollāyī a breach in a bank (Gundert).
Kollai	A '*close*,' an enclosed field, garden or yard; a '*croft*;' applied in Tanjore to the enclosed fields that cannot usually be irrigated, but have a fence or hedge: cf. kōl a rod, or stick. Compare the derivation of *yard*, *vallum*, *town*, &c.
Kōmal	In Māyavaram Tāluk. A cow-sacrifice made by Rishis here, they say.

Koṇḍān	In combination = *met, obtained*; also applied to a channel, *e.g.*, Uyyakoṇḍān, at Trichinopoly ? It is also found in titles of princes, and means *Wearer* (?)
Kōnūr	'*Kingsville.*' Kō, or Kōn, is ancient Tam. for a king: cf. (Pers. Khān). Kōn is a title amongst the Iḍaiyan or Herdsman tribes.
Koraḍachēri	....
Kōraiyāṛ	*Reed-river*: kōrai, reed, coarse grass. Several river channels of this name.
Koṛukkai	(Near Māyavaram) stated to mean '*short arm,*' referring to an image of Pillaiyār *The honorable son* (of Siva,) with short arms ; ? Kuruku = short. Koṛkai in Tinnevelly, Dr. Caldwell derives from kol = slaughter, and kai = hand, and gives koṛkai as the modern form of the old Tamil kol-kai, a poetic word for an *army* or *camp* ; from this place the Greeks named the gulf of Manār the "*Colchic*" gulf.
Kōṭṭagam	A tank, pond, &c., also a temple; same as kōṭṭam a place, an agricultural district, &c., applied to the *meres* or waste-water lakes in E. Tanjore.
Kōvaḷam	A cape, headland, or a town so situate. It is found on the coast, *e.g.*, '*Covelong*' south of Madras, and elsewhere. "*Kovalam*" near Cape Comorin.
Kōvilan tōppu	'*Kovilan's Tope*' (*Churchman's clump*). Kōvil a temple, tōppu = Sans. stūpa a mound, clump; the initial S dropped, as in talam for stala, tān for stāna, &c.
Kōvilpattu	= '*The* 10 *véli of land belonging to the Temple* ; (the '*Coilputh*' frequent on A.S. 79) applied to a temple, village, or a place belonging to a temple ; pattu usually means ten (10), can it mean *tithe* here ? Paṛṛu or patt(r)u a parish, from paṛṛu = *grasp*, adherence, attachment, &c.
Kōvindaguḍi	A tamilized name of a brahman village near Kumbakōṇam ; there is a local legend accounting for the name as of Tamil origin, and not from the Hindu proper name Gōvind '*The cow finder*.'
Kuchūr	'? *Cot-ville,*' from kūchu a hut, a cottage of leaves, &c., connected with kūchu for kūrchu = 'point or peak.' *See* Kuppam and Kurichi.
Kūḍalai-Áttūr	*River-town at the confluence.* Kūḍal signifies a meeting, junction ; *see* next.
Kūḍalūr..	The place of meeting, junction, assembling, collection, &c., commonly applied to a confluence ; *e.g.*, Bavāni-kūḍal ; Kūḍali (of Kistna and Tumbhadra). It is common elsewhere, applied to any place of meeting.
Kuḍikkāḍu	A hamlet; an outlying hamlet : scattered huts = ? '*The cottages.*' *See* Káḍu.

Kuḍitāṅgi	A village on the edge of the Kolladam river bank; 'Koduthany' of A.S. 79; the field nearest to the supply channel is called Kuḍithāṅgi.
-kuḷi and -kuṛi	A pit, hole, hollow, dell. Tōṛakkuḷi = *Herd-hollow*; Kuppankuḷi = *Cottage dell.*
Kulichapaṭṭu	....
Kumbhakōṇam [8]	Former capital of Tanjore and seat of a Chōla dynasty, but now of brahman wealth and culture. The derivation commonly given is Sans. kumbha = *a water pot*, and kōṇa = corner, edge; *brim*; with kumbha compare Gr. κύμβη a hollow, Lat. cymba a vessel, Eng. coomb. fr. Sax. cumb, a vessel to measure with; may not this name have some connection with the legend that Kāvēri originated in the upsetting of the Rishi Agastya Muni's waterpot by a crow, and its water flowing thus far: Kumbakōṇam having been built near the extremity of the Kāvēri floods?
Kumbhēśvaran	'*Lord of the water pot*' = Kumbha-īśvara; deity of the Śaiva temple at Kumbhakōṇam.
Kumulankāḍu	(the 'Clamungcaadu' of A.S. 79)? Kalimankāḍu = '*Clay jungle.*' Áladi-kumulai was met to the southward.
Kuṇavāsal	*See* Annavāsal and Koḍaivāsal.
Kuṇḍūr	Kuṇḍu a (cannon) ball. A shot fired from the great gun on the E. or N.E. ramparts of Tanjore is said to have reached this village 4 miles off, and a masonry mark is still shown, and said to denote the spot. Cf. the Guṇḍu Grāmam, "cannon ball villages" at Cuddalore.
Kuñjuveḷi	A new name for Nāgappa Nallūr in N.E. Trichinopoly. *See* Veḷi.
Kunnam	? perhaps for kuṇḍram, a hillock, &c., common in S. and N. Arcot Districts.
Kuppam	a hamlet or suburb, of poor people or low-caste folk, such as fishermen, &c., made of *thatched* huts or '*peaked*' *cabins.* The root meaning seems to be, *heap, group, collection, pile,* &c., generally of refuse. This name is hardly to be found south of the Kolladam and Kāvēri. Its home is the valley of the S. Pennār, and between the Pālār and Vellār rivers in S. Arcot, but it extends on the coast between Pulicat and Point Calimere, and inland from Cuddalore as far as the E. Ghāts. The group of *pointed roofs* is the chief feature: Cf. koppu and Gōpuram, a pointed roof, spire. Kan. kop, koppalu, a suburb, a cluster of pointed thatched huts; Tam. kuppai and kuppal a heap, collection, stack, dunghill, &c., &c. The root kab, kap, kop, kup, &c., is found with allied meaning in many languages.
Kuppaṅkuḷi	*Cottage dell.*

[8] The right form is Kumbhaghōṇa, its ancient traditions are contained in the Kumbhaghōṇamāhātmya.—G.O.

Kuṛichimalai	kurichi means a little village or hamlet, usually in a wild place; kun(d)rachi has been suggested as a fuller form of the word, as if from kun(d)ru a hill; but compare kuṟu = short, Fr. court, Lat. curtus, Per. and Hind. Khurd. Sans. kshūdra, low, mean; Gr. κυρτός; also kūrai = a pointed roof. *See* Kuppam and Kuchūr.
Kuttālam	There are several places of this name in E. Tanjore ('Cutaulum' and 'Kourtallam' of A.S. 79) and the well known '*Courtallam*,' in Tinnevelly; other instances of names common to Tanjore and Tinnevelly are Pāpanāśam, Teṅkāśi, &c.
Lālpēṭṭai	a decayed town named after Lāl-Khān of Pālai-yam-kōṭṭai between the Trichinopoly and South Arcot Districts.
Mailam	Near Tindivanam, South Arcot, for Mayilam which is said to be a corruption of Mayūrastalam Peacock's place. *See* Māyavaram. A Śaiva temple on a low hill near the Mailam ("Mylam") railway station, South Indian Railway, said to have been built by Jaiyamba, or Jayambaga Maharajah, from the north.
Malai	A hill or mountain; although Tanjore is quite flat, except for the river channels and a few low sand mounds, yet many places have this affix, *e.g.*, Swāmi-malai, which Dr. Burnell is inclined to identify as the Malakuta of Houen Tsang.
Malaiyanattam ..	....
Maṇakkollai	'*Sand field*:' Māṇal = sand: a common prefix.
Maṇakkuṇḍu	'*Sand hill*.' *See* Man-malai below, and Malai above.
Maṇalmēḍu	'*Sand mound*.'
Māṇikam kollai ..	*Māṇikam's field.*
Mannārguḍi	Prince's abode, from mannan or manavan, a king, prince; (Mannār also means enemies, foes). There are several places of this name.
Mannanpuñjaitōppu ..	Commonly called 'Mannamiñjai tōp;' mannan, a king, prince, and punchey dry (inferior) land.
Manmalai	(*See* Manakkunḍu) *earth hill*, or *sand hill*: maṉ = earth, manal = sand.
Māppillai Nāyyakkan-paṭṭi.	There are no people called Māppillai (Angl. *Moplah*) in Tanjore; māppillai means son-in-law.
Māppillai kuppam ..	(In the Nannilam Taluk), there is a legend at Tiruchengāṭṭāṅkuḍi ("*Saint-Red-wold's dwelling*"), that Śiva visited a Śaiva devotee in the guise of a hungry ascetic, and refused to eat any food except the flesh of his only son, who was accordingly killed and offered. An annual commemoration is still held, when a child made up of flour (mā) is sacrificed and offered to Śiva. The cost of this festival is defrayed from time immemorial by the villagers of Mā(p)pillai kuppam; pillai = a child, and kuppam a hamlet.

Marudūr	(Or maruthūr) this is a common place-name in Tanjore, and is perhaps derived from marutham = agricultural land; marutham or maruthai-maram also means a tree (? Terminalia alata), under which the village god stands. Maru = fragrance.
Maraṅgūr	Occurs more than once.
Māyavaram	More properly Māyūram (for Māyūra-puram) = *Peacock-town.* The natives call it Māyavaram, and the English Mayāveram. Mayūra (modern H. mōr,) = Tam. mayil, Kan. Navul, all from the peafowl's cry. *See* Mailam.
Mēlai-Kaḍambūr Mēlaiyūr.	West Kaḍambūr (q.v.) The kaḍamba tree is sacred to Skanda. '*Weston*:' mēlai = upper = western, as the country rises to the west.
Meykankollainattam	'Meykan's-field nattam;' M's upland village.
Moṭṭai-kollai	'*Mound field*' from the sandy ridge in it; from mēḍu, pronounced mōḍu = rising ground.
Moṭṭaiyan teḍal	Moṭṭaiyan's (? Bald-head's) mound: an old village site, also called Tirumaṇamaṅgalam: teḍal, tiḍar, tiṭṭai = a mound, bank, platform.
Mummuḍiśōḷagan	(The Momotisolum of A.S. 79)? 'Three crowned Chōḷan.' Mummuḍichōḷapuram to the southward is called Muppaiyūr and Muppūr.
Mūrttiyammālpuram	So named after the wife or mistress of a raja. *See* Kastūriyammāl.
Mūrttiyān	Mūrtti = body, form (of deity) = Image, idol.
Musēri ? Musiri	There are several instances of this name (? musu = ape).
Muttammālpuram	Named after the wife or mistress of a rāja: *see* Kastūriyammāl; (Muttu a pearl) *Pearl-lady-city* = *Lady Margaret's Town.*
Muṭṭuvāñchēri	(Mootooveñchairy of A.S. 79)? Muṭṭuvan's village.
Mūvalūr	(Māyavaram tāluk) Triad (or Trinity) town. Brahma, Vishṇu, and Rudra performed service to the supreme (Śiva) here; mū=three; *see* Tiruvālūr.
Mūvānallūr	? May have some connection with mū, mūṇḍru = three; *see* next.
Mūvarakōṭṭai	'*Trinity-fort*,' *see* Mūvalūr; mūvar = three persons: it is vulgarly called Mūvaraṭṭai, or "Mūvaṭṭai."
Nāchiyār-Kōvil	? '*The honourable lady's temple.*'
Naḍār	'Middle river.' This village is on the Veṭṭār (= "*dug-channel*"), between the Vennār and the Koḍamūrtti, river irrigation channels; *see* next.
Naḍu-paṭṭi	= 'middle fold.' naḍu = middle, centre, and paṭṭi a hamlet.

Nāga	The cobra; a *snake* (Ang.-Sax. snaca). There is a cluster of Nāga or serpent names in Tanjore running inland from Nāgapaṭṭanam and Nāgūr on the coast, as far as Trichinopoly. They are Nāgai, Nāgakkuḍi, Nāgalpūṇḍi, Nāgalūr, Nāgamaṅgalam Nāganāthasāmi, Nāganti, Nāgapaṭṭanam, Nāgarasapuram, Nāgáttūr, Nāgēśvaram, Nāgūr (bis.); also Pāmani, Pāmbanōḍai and Pannateru in the same neighbourhood. For the root compare Lat. anguis (? nagvus) from the Sans. root ak or ank to move *tortuously*, aṅga a *curved* body, a limb, whence angulus (*cf.* annulus) and Gr. ἐγχέλυς an eel, &c., &c. Eng. snake fr. Sax. (s) *naca.*
Nallanam	Nalla = good; perhaps for Nannilam, q.v.
Nallavanniyaṅkuḍikkāḍu.	A caste name or title of a small Tamil tribe; kuḍikkāḍu = cottages, a hamlet. *See* Kāḍu.
Nallūr	*Good-town*; a very common name, usually suffixed.
Nannilam	'Good soil,' from nalla = good, and nilam = ground, earth; nal becomes nan in combination, *e.g.*, nañjey = good (rice) field; name of a tāluk.
Naṭṭam	A village, or village site; the land reserved for building ground and gardens, &c., usually above irrigation level, and therefore = dry ground, applied especially to the villages of common peasants; in South Tanjore Kallar (s).
Naṭṭamalai..	? The village mound.
Nayinipiriyān	For Nāyakani-piriyāl = '*Lord and lady inseparate*'; both god and goddess are lodged in one temple together.
Neppu kōvil	? 'Fire temple' Neppu for Neruppu = fire.
Neykkunnam .. .. Neykuppai .. .. Neyvanai .. .. Neyvāsal	This name occurs frequently north of the Kolladam river. Ney is often met in other combinations, and has many meanings, *e.g.*, grease, 'ghee,' blood, &c.; fat, rich (land). But ney may stand for nesavu = *weaving*. Weavers form a considerable part of the population.
Nīḍāmaṅgalam ..	
Nīraḍamaṅgalam ..	
Ōḍai	In Tanjore a reservoir, tank. In Madura and on the South Coast Ōḍai is more commonly applied to a watercourse: fr. Ōḍu = run.
Okkūr .. .. .. Orattūr .. .. Ōriyūr	Several places of this name. ? the '*Orthura*' of Yule's Map of Ancient India. Several places with these names, Ūraiyūr = "City of habitation."
Oruttanāḍ Chattram ..	for Oruttarai-nāḍiya = *Sole proprietor's* chattram. This is the name of a country house of the late Rajah (Sarboji) 14 miles S.E. of Tanjore. The Natives commonly call it Vārttanāḍ chattram and the English "*Rajah's Choultry*" (chāvaḍi), but the old name of the village is Muttammālpuram = '*Lady Margaret's Town.*'

Paḍanilai	? Paḍunilam.—Waste ground, un-irrigated land.
Paḍappuguḍi	from paḍappai, a stall, yard, garden, enclosure for agricultural purposes.
Paḍar-kallu-poṭṭai ..	'*Strewn-stone-barren*,' an upland gravelly waste in N.E. Trichinopoly.
Paḍavai	for paḍugai, a low tract or flat by the river side.
Paḍugai	an outlying hamlet, a cluster of huts at some distance from the village; arable land near a river.
Pāgalmēḍu	'*Paugulmoodoo*' of A.S. 79. There is no specially high ground (mēḍu) here to account for the name. Pāgal, Jack-fruit tree: also a garden creeper.
'*Palagaram*' ? for Palaiyagaram.	A.S. 79, 7 miles E. of Kumbakōṇam, no place of this name heard of now, but might mean '*Old Agraharam*' as there is a flourishing village called Puttagaram (*New Agrahāram*) very near the site of the name given.
Paḷḷam	low land; a hollow, valley, dale or dell (cf. Lat. palus a marsh, *pool*): cf. Tam. pulam and pollai, field, and Can. hola a field, hole a lake or river, &c., &c., all low places. This is a common affix to place-names in the Delta of the Kāvēri, especially near the S.E. Coast and near the river channels, *e.g.*, Kāchānpaḷḷam.
Paḷḷiviḍai	'*Pallans-place*' or '*Pallars grant*;' viḍai alone, means liberty, leave, permission.
Paḷḷiyēri	for Paḷḷiyaṛai which means a bed chamber, this village having been granted to the great Tanjore temple as an endowment to meet the expense incurred in putting the god and goddess to bed daily.
Pāmaṇiyāṛ	'Pāmaṇi-river,' from a place near Mannārguḍi named after a snake-wearing deity. Pāmbu a snake, aṇi wearing.
Pāmbaṇāṛ	The river forming the south-eastern limit of Tanjore District. Pāmbu = snake, aṇi = wearing. Persons of the Nāga or serpent race are represented as wearing a snake or many-headed Nāga over them hood-fashion.
Pāmbaṇōḍai	*Pāmban* (= *snake*) *water-course*. Ōḍai a channel, a dry water-couse (from Tam. Ōḍu = run) S. Coast usage. In Tanjore and northwards, a pool.
Pandanallūr	*Ball* (*player's*) *Nallūr*. The god and goddess at the temple here are represented as playing at ball; pandu a ball. Cf. H. piṇḍa a ball, *bundle*.
Panaiyakkōṭṭai ..	Palmyra-fort; *see* next.
Panai	The palmyra palm. In Tanjore the palmyra is rather scarce and inferior. Can the Tamil name be derived from Sans. pāṇi the hand?
-paṅgu	a division, share, &c., lot. Chinna Māṇikapaṅgu near Tranquebar.

Pannateru	Fr. Pannagam serpent, and tharu ? (thari for Sans. dhara) = wearer = *serpant-wearer* = Pāmaṇi, q.v. This is one of the *Negapatam* (= Nāgapaṭṭanam) and Nāgūr cluster of serpent names; near Tiruturaipūṇḍi. Cf. Painnāgam.
Pāpanāśam "*Pāvanāśi*" of A.S. 79.	For Sans. Pāva-vināśam = 'sin-extinction;' name of a place on a branch of the Kāvēri, where a legend is told of a Chōḷa prince who made a pilgrimage hither and was cured of his disease (idiotcy), and in gratitude built a temple to Pāvavināśasvāmi the remover of sins. There is another Pāpanāśam, a sacred bathing place, or Tīrtham in Tinnevelly on the Tāmraparṇi river.
Paṛāñchēri	The 'Prauncharу' of A.S. 79, 2 ms. E.N.E. of Kumbakōṇam.
Paṛappanēri	? *Scorpion lak*; fr. paṛappan a scorpion (? fr. para to hurry or dart about.)
Paṛaṭṭai	The 'Purrayta' of A.S. 79, 2 or 3 ms. N. of Kumbakōṇam; ?= '*tangled or matted locks*;' ? for scrub jungle, *bush*, &c.
Paṛavanāṛ	A broad river channel or drainage line running from near Vridhāchalam to the sea at Cuddalore; perhaps once the bed of the Maṇimuktāṛ which now falls into the Vellāṛ at Kūḍali-āttūr; paravu signifies spread = broad.
Paridhikōṭṭai	A fortified village named after the local deity Paridhivanēśvar from Sans. Paridhi = the sun, a halo, glory, disk, &c., vanam a wood, grove, &c. and Īśvar lord.
Paṛuppar or Paḷuppar..	Proper name of a (?) Jain image found in the N.E. of the Tanjore and Trichinopoly districts.
Parutikōṭṭai or Paruttikkōṭṭai.	*Cotton (plant) fort.* Parutti is not an infrequent prefix to village names in the Southern portion of Tanjore.
Paṭṭachēri or Paṭṇachēri	Common usage for a fishing village on the coast of the Kāvēri delta; also paṭṭichēri.
-pādi	A part, division, one-half. Ten-pādi = southern part, Vaḍa-pādi = northern part.
Paṭṭīśvaran	'*Lord of the fold*,' vulgarly pronounced and written Paṭṭi-yēsuran the '*Patti Yeshuran*' of A.S. 79; from *paṭṭi* a cattle-fold, and īśvara = Lord, possessor. Paṭṭīśvaram is a large temple near Kumbakōṇam.
-paṭṭu	a common affix to place-names in Tanjore and north-eastwards; derivation uncertain. It is said to signify 'attached,' 'appertaining,' or 'belonging to' as if from parṟu (= pattru) to seize, embrace, attach, &c. The final *u* is mute, Chengalpaṭ (for list of -paṭṭu met in or near Tanjore, *see* below). It sometimes becomes veṭṭu (improperly), *e.g.*, Kaṇakkarveṭ for Kaṇakkarappaṭṭu, near Chidambaram.

-paṭṭu	In Tanjore S. of the delta towards Paṭṭu-kōṭṭai, Ambalā-paṭṭu Arasa-p., Ārusutti-p., Kandutan-p. Kulacha-p. Naḍu-p., Nallambāḍi-p., Naval-p., Sikkala-p., Tellāram-p., Tiruvēgam-p., Toṇḍarān-p., Vadakkai-p., and Vanni-p. (bis). Iruppai-p., Kanakara-p., Maṭham-p., Vānām-p. and Vettiyār-p., south of Vellār. North of Vellār,-paṭṭu becomes more frequent again; Kaliyāl-p., Kallāp., Kal-p.. Malli-p., Māmpala-p., Maṇḍa-p., &c., &c., and it is probably common as far north as Madras; Cheṅgalpaṭṭ(u) and Chēttuppaṭṭu (= Chetpaṭ). With -paṭṭu compare paṭṭi a fold, pāḍi a (village) row, pāḍu settlement, abode, pāḍa Mar. = Tam. paḍagai an out-lying hamlet, pāta = Mal. pāṭam, a flat, range of rice fields, paṭṭanam, paṭṭachēri or paṭṭichēri, pēṭṭai, paṭṭa-mānyam (village head-man), paṭṭaḍai a stock, heap, &c.), paṭṭai bark (of tree), stripe, &c., paḍu and paḍugai a pit, pondhole, tank; ? root paḍu lie down, settle, pave, set, suffer, &c.
Paṭṭukōṭṭai	(no meaning given). Paṭṭ-is most common in this vicinity, *e.g.*, on the East Coast Paṭṭachēri, -paṭṭu, *see* above, and paṭṭi to the S.W. The ancient Batæ (βατα) is placed in this neighbourhood; many place-names have the affix -paṭṭu near here: *see* previous word.
Payiri	Several instances of this name. Payiri is a certain edible plant: payir means growing grain, crop, herbage, shrubbery.
Paiṅgānāḍu	local use for Paṅganāḍu or Pañjanāḍu. There is a Paiṅgālūr not far off this place. Paiṅg means five (5).
Pēkarumbukōṭṭai ..	= '*Wild sugar-cane fort*' properly Peyk-karumbu-kōṭṭai. Pēy = fiend, devil; in comp. pēy means wild, as plants, &c.
Perambūr	? 'Great town,' of common occurrence in S. India, but it is said in Tanjore to mean Kaḷḷar's town; Perumān (or Perammai) a Kaḷḷar caste title.
-pēri	an affix to place-names in S. India especially in Tinnevelly.
Periyarekkunnam ..	Tam. periya, peru, pēr, = great. Tel. pedda and peda. Cf. H. baṛa and baḍa = great.
Perumāṅguḍi	'*Great hero's dwelling*' Perumān is one of the hundred caste names or titles amongst the (Kaḷḷars ?). *See* Perambūr.
Perumpāṇḍi	the 'Pirompundi' of A.S. 79 "*Great Paṇḍiyan.*"
Pēṭṭai	Tel. pēṭa Kan. pēṭē a suburb or village with shops, a market town. In Tulū pēnte = bazaar, Mahr. pēnṭh, market, also pēṭh. Can pēṭṭai be from Sans. root piṭ to sound, assemble, heap together, &c., whence piṭa (mod. piṭāra) a basket for grain, and piṭam a house, hovel, roof; pēṭa a large basket, also a crowd: pēṭagam a company

Pēṭṭai—(*Continued*).	Tel. Pēram = trade? Is not the pēṭṭai a shop, store, or continual market (in contradistinction to Tam. Santai a weekly market or fair), an introduction from the North of India? and has not the word been brought into use by the early Muhammadans into S. India? They are great traders and merchants. pēḍu is also an affix to village names: but compare paṭṭachēri, paṭṭu, paṭṭinam and paṭṭi, all common in this part of India.
Pichanūr[9]	? from Pichai the watermelon. Pichai means also, alms, charity.
Piḍāgai	applied to a subordinate village or sub-division. Cf. puḍam a side, and puṛam outside, a suburb, also spelt puḍāgai.
Piḍāri	a fierce tutelary goddess or grāmadēvata whose temples are numerous in Tanjore villages especially in those occupied by low caste folk.
Piḷḷaiyār	'*The honourable son*' (of Śiva), called in the north Gaṇēśa and Gaṇapati = 'Lord of hosts,' also Vighnēśvara = *Lord or Remover of obstacles.* His temples, or shrines with his image having an elephant's head and a man's body with a pot belly are to be seen everywhere. Cf. Lat. filius, &c., &c.
Pinnaiyūr	? fr. Pinnai, a younger sister; also a flowering tree yielding oil (Calophyllum inophyllum).
Pirambūr	(Māyaveram Tāluk) '*Rattan-cane town*' Sans. name Vētravanapura. Cf. Hind. bēt or bēnt, a cane.
Pirāndai or Pirandai ..	a garden of tulsi plants, sacred to Vishṇu.
-poḷi	a boundary (? poḷi a bank in a rice field) Tiru-v-ālam-poli = '*sacred banyan boundary.*'
Ponviḷainda nallūr ..	*Gold-producing-Nallūr* from its fertility (*see* next). Ponviḷañja is the vulgar form.
Porpadiñja nallūr ..	'Porpundaganulloor' of A. S. 79. 'Golden-crop-nallur' from pon (= H. sona) gold and padiñju = planting.
'Porto Novo'	Called Muhammad (or Mahmud) Bandar; but the station is known as Faraṅgi-peṭṭai.
Poṭṭān kāḍu	'*barren jungle;*' *see* next.
Poṭṭai	*a barren*, and not for poṭṭai, a lump or hummock which is commonly applied to a hillock in Tinnevelly. Poṭṭal an arid tract; fallow ground; poṭṭai = blindness.
Pondu or Pontu ..	? a hole.
Puḍāgai	a sub-village or hamlet, a detached street or hamlet = Piḍāgai, q.v.
Pudukkaḷam	'*new threshing floor.*' Pudu or pudiya = new, and kaḷam = area, arena; a threshing floor.

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[9] Connected perhaps with the word *pichan* (bhikshuka), a beggar, a common expression in South India.—G. O.

Puduyēri	*New lake.* Pudu new, and ēri a big reservoir, or irrigation tank.
-pulam	a field, not uncommon, *e.g.*, Karuppan-pulam = '*black field*,' Nedum-pulam = '*long field.*' Cf. Tam. polai, Tel. polanu, Kan. hola, a field.
Pulavankāḍu	? from pulavan, a sage, philosopher, &c. "*Wiseman's wood.*"
Puḷiyam paḷḷam ..	'*Tamarind-dell*' the 'Mallayamalam of A.S. 79. puḷi = sourness.
Puḷiyan tāṅgal ..	'*Tamarind tank*' Tāṅgal is rare in Tanjore, but common to the northward.
Pūndāḷamēḍu	prounced pūndāra or pundāya-mūṟu (*Flower-garden-mound*); *see* next.
Pūṇḍi and Pūḍi ..	= shrubbery, garden, or grove; from pūṇḍu or pūḍu a plant, herb, shrub, &c., in Tanjore and northwards. In Madras coast districts, Pūṇḍi is a common name for a village; Pushpavana-īsvaran the name of the local god here points to pū (Tam. equivalent for Sans. pushpa a flower) for the derivation. Cf. Pūnthamalli (Ang. "*Poonamalee*") for Pūvirunthamalli (? vali); pūṇḍu in Tam. = flower, shrub. Tirupūṇḍi and Tirutarupūṇḍi are so named from the Bēl-tree groves there, sacred to Siva.
Puttagaram	New agr(ah)āram, '*new house*' for Pudu-agra-hāram.
Puttūr	"*New Town*," Pudu or puthu = new in compn. putt- ; also puthiya, new.
Pūvaraśuveṭṭikkāḍu ..	'*Portia-felled field.*' Portia, the English name of the Thespesia populnea, like Pāras, its Dec. Hind. name, is from the Tamil Pūvarasu, which is from pū = flower, and arasa (maram) = Raja's (tree). The Pipal (*Ficus religiosa*) is in Tam. Arasa-, Tel. raya- or rāgi-mānu, *royal* tree, and the portia is the *Flowering-pipal.* It is a kind of hibiscus and grows freely in S. India, flourishing most near the sea shore. The common English name in Madras is *Tulip tree.* *See* Veṭṭikkāḍu.
Pūvattūr	? from pū flower, and ūr = village.
Rāgamveṭṭikkāḍu ..	(prond. Rāgamaṭṭikkāḍu) = Rāgan's clearing: veṭṭu = cut, dig, &c. *See* Veṭṭikkāḍu.
Rāgammāl	Proper name of a princess. Sans. rāga = love, passion, music; ammāl = lady.
Rāja-Mannārguḍi ..	*Royal* Mannārguḍi (*Princes' abode*), to distinguish it from Kāṭṭu-Mannārguḍi.
Rāmanellūr	name of an island in the Kolladam (Coleroon) river.
Rārāmuttiraikōṭṭai ..	a corruption of some proper name perhaps Rājā-muttu-rāya's fort.
Rāsālikuḍikkāḍu ..	? from Irāsāḷi a large kind of hawk (? Rājāli).
Rāyapuram	? *Raja's Town* or Royal city.

Reṇḍāṅkaṭṭaḷai ..	'*second grant*,' one of the seven kaṭṭ'lai villages 6 ms. E. of Kumbhakōṇam. *See* Kaṭṭaḷai.
Reṭṭavayal	Perhaps for Iraṭṭavayal = double-field; reṇḍu is the vulgar usage for iraṇḍu two, and reṭṭayāna for irattayāna double.
Śāliyamaṅgalam ..	also named Achuthapuram, a Railway Station, South Indian Railway. There is a local tradition of Śālivāhana as founder: but the name is more probably derived from Sāliyar *weavers*.
Samuttiram	Tam. form of the Sans. Samudra or Samundar, a lake, large sheet of water, the sea, ocean; from Sans. Sam = together with = gathering, collection, meeting, and Sans. uda and udra = water. Gr. ὕδωρ, Lat. unda and udus, Gothic Vato, Lith. wandu = water. Cf. *wet*, *exude*, *sweat*. Slav. woda, Esthon wott, &c.
Santai-pēṭṭai	'*Fair-town*' or '*Market street*,' a weekly market place or periodical bazaar, from santi to meet, meeting, (Sans. sandha), and pēṭṭai, q. v.
Śāraṅgapāṇi	a name of Vishṇu at Kumbhakōṇam as '*the bow-man*;' Sārṅga a bow, and pāni the hand, '*Bowarmed.*'
Śāttambāḍi	? Sāttan's (= Ayanār's) place; pāḍi a row, hamlet. Sans. Śāstā = teacher.
Śāttanūr	(common) Sāttan a popular tutelary god, better known as Ayanār; *see* last.
Śāttanūr	in one instance near Tanjore it is said to be short for Sāvittriyammāl, a Nāyakan princess, who founded it.
Saṭṭiviḷāgam	? for Cheṭṭi, or for Satti power, prowess; viḷāgam = field of battle (vilāsam = *pleasaunce*).
Saṭṭiyamaṅgalam ..	the "*Cheththemaṅgalum*" of A.S. 79 = '*Real-prosperity*' from Sans. Satya, true, genuine; and maṅgalam = prosperity, joy, delight. Maṅgalam is a very common name in Tanjore for a flourishing village with rice fields.
Savunar	pronounced Saunar or Shevunar; name of a small caste or sect of people in S. India. This name was found applied to a Jaina image at Jayankondachōḷapuram; another similar image was called Paṛuppar (Pazhuppar). The Greeks and Arabians were called Sōnaga (= Yavana) = ? Ionians.
Śēkal	? Seykāl = arable or tilled land; (? from Chey a corn field, cultivation); there are several places in Tanjore and to the southward named Śēkal, Shakal, Sikal and the 'Sikkle' of A.S. 79, properly Sikkil.
Śembaṅguḍi	? *Redman's abode*. Se, sem = red, straight, beautiful, Semmān is a shoemaker, currier.
Śēndirakaḍaivallam ..	? Sendira = red; kaḍai = bazaar. Vallam (q.v.) is found repeatedly in Tanjore and northwards.

Sēppalānattam	Vulg. Sēppalāth, for Seyyapperumāḷ nattam ? = Beautiful Perumāḷ's (Great one's) village. The present village temple is sacred to Aiyanār as if the worship of Vishṇu had given way to that of Śiva; but Aiyanār is the demon god, son of Vishṇu and Śiva; hence called, Hari-hara-putra.
Serumaṅgalam	? '*War-mangalam.*' Seru = battle.
Śeṭṭitāṅgalēri or Śeṭṭiyaṅkālēri.	'*Chetti's support lake,*' or '*Chettiyan's channel tank*;' tāṅgal means a support, prop, &c., and so also does kāl; tāṅgal is applied to a pond or (? natural) tank, but kāl to a channel or water-course, = kālvāy and vāykkāl.
Śīyāḷi	More properly Śīrkāḷi (சீர்காழி).
Śōḷamādēvi	'Chōlan's great goddess' mā for mahā. *See* Vikkiramādi.
Śōḷāpuram	*Cholan's town*, not a rare name in the old Chōḷa-maṇḍalam (Coromandel). Cf. Shōranūr which is equally common.
Śikkalāpaṭṭu	The 'Shakeapattu' of A.S. 79.
Śīppiliyūr	For Srī = holy, puli = tiger and ūr town. Puliyūr is more common in South Arcot.
Śittālattūr	'Little Ālattūr' chiṟu = little, in combination before a vowel chiṟṟ-pronounced, and very often written, chitt—or as here, *Sitt*-Ālattūr; *Little-banyan town.*
Śittamalli	Or Suttamalli; one or two other places called malli met with, besides Puvirunthamalli (*Poonamalee*).
Śivakkollai	'*Red field,*' from se, sen, sivappu = redness; and kollai a field, enclosure; the soil is of a very ruddy color. *See* Chengāḍu.
Sōṛakkuḍi	? from Sōṛakkāy a kind of pumpkin.
Śtrīpuṛandān	....
Sundaraperumāl Kōvil.	*Beautiful Perumal's* (*great one's*) *temple*, given as 'Shandalla-permalcovil' on A.S. 79 and vulgarly pronounced Sandala, &c.
Sūriyamaṇal	Sūriyan the sun, and maṇal = sand, dust, gravel; '*Suriyan's sand.*'
Suvāmi (or Svāmi) malai	Sans. Svāmi = Lord, from Sva = own, self (cf. Lat. suus). Dr. Burnell inclines to identify this with the old Malakūta of the Chinese pilgrim Houen Tsang.
Talaṅgambāḍi or Taraṅgambāḍi ..	(Tranquebar) formerly a Danish settlement. The name may mean *Telingan's street or village.* There are a few other places in Tanjore with Telungan prefixed. The Telingan, or Telugu folk, were early called Tlings (mod. Kling). Cf. Kalinga-paṭṭanam.
Talavā pāḷaiyam ..	'*Commander's fief.*' Talaivan = *Head man*; and Dalavāy is the common title for the Generalissimo, or, prime minister at a Native South Indian Court.

Tāḷai vanam	Tāḷ or Tāri (cf. *toddy*), '*Palmyra-(palm-) forest*,' another name for Tiruppanandāḷ (q.v.) *Sacred palmyra place.*
Teluṅgar kōṭṭagam ..	the '*Thullingar Cotagam*' of A.S. 80 = *Telingan's mere*, properly Taḷaināyarkōṭṭagam. ? Kōṭṭagam a pond, tank: a temple.
Tāṇḍavantōṭṭam ..	? Tāṇḍavan's garden: tōṭṭam a garden from tōṇḍu = dig.
Tāṅgal	a support, prop, often applied to a *tank* in North and South Arcot Districts, rare in Tanjore. The water is raised or supported by the embankment. Cf. ēri and ēnthal.
Tanjore	strictly Tañjā-ūr, familiarly called Tañjai by the natives. It is more fully given as Tañjai-mānagaram = *Tañjan's-great-city*, after its founder. But tañjam means refuge, shelter. Tañjaimān is also given as the founder's name.
Taraṅgambāḍi ..	= "*Tranquebar*" for *Talaṅgambāḍi* (q.v.)
Tattanūr	....
Tekkiruppu	'South-ham.' Southern-dwelling. Ten, Teṛku, tek- = southern; iruppu = residence, abode, dwelling, from iru = sit, be, remain, dwell, &c. *See under* Tennalguḍi.
Teluṅgaṅkuḍikkāḍ ..	'Teliṅgan's-cottages;' *see* Talaṅgambāḍi.
Tennalguḍi	? South-dwelling: ten- teṛk- tek- &c. = South; Tennai the cocoanut (tree). Cf. Sans. dakshiṇa (= Right-hand = south) = dakhin (Ang. Deccan) in Tam. becomes teṭchiṇam, and tekkiṇam, ? whence ten. In a similar way Vaḍa = north may have some connection with San. ud, whence uttara = upper = northern. Teṭchiṇam Pottai, The Southmost hillock (at Cape Comorin).
Tenpādi vaṭṭam ..	Southern division of the vaṭṭam (circuit, a group of villages).
Teru	= a street, vulgarly called Teruvu and applied to a row of cottages, or the hamlets scattered about a large village or parish. Cf. Mal. thaṛa.
Teru or Theru ..	vulgar usage in Tanjore for Tiru sacred, auspicious (= saint), the Tamil form of the Sans. srī. It is also the name of Lakshmi.
Tiḍal	a mound, same as teḍal, tiḍar, tiṭṭai, &c. a little hill or rising ground.
Tillaivanam	Chidambaram (q.v.) Tillai a tree with milky sap. Perhaps Yules "Thellyr" may be for Tillaiyūr: but cf. Thalūr near Tirutarapūṇḍi, and Tellūr in South Arcot.
Tiruchiṛai	name of a place and temple 7 miles S.E. of Kumbhakōṇam. '*Tiricheri*' of A.S. 79 and '*Tirricherra*' of Colonel Lambton's chart. Can this be a place dedicated to a *three-headed* (Tri-sira) dēvata? Sārantha-Perumāl is the name given; compare Tri-sirā-palli = Trichinopoly = Three-headed (one's) town.

Tirukalā-ūr	There are several places of this name in Tanjore: *e.g.*, *Tirukkalabur* and *Terrucolatur* A.S. 79; *see* Teru.
Tirukōṇapuram ..	'Terrukanapuram' of A.S. 79. Can this be for 'Tri-kōna-pura' = '*Three-corner town*' as Tiru-kōnā-malai for Tri-kōṇa-malai, *i.e.*, "*Trincomalee*" = the three peaked or *triangular mountain*, on the east coast of Ceylon?
Tirukarugāvūr ..	the Sans. name is Garbha-raksha-puri, and both names signify that females in bearing never *miscarry* at this place, a tradition believed to this day. Sans. Garbha = womb, Tam. karu = embryo, fœtus.
Tirumalairājapuram .. Tirumalairājan .. Tirumalasamudram ..	These names of great public works, may have reference to the great Tirumala Nāyakkan, who ruled over Madura and Trichinopoly in the 17th century.
Tirumattēri	Common usage for Tirumā-ēri; *see* Vīrānattēri.
Tirumaṇamaṅgalam ..	(Vulgarly called also Tiruvaṇamaṅgalam) '*Holy soil maṅgalam*;' *maṇ* = earth, soil. A large mound of debris marks the ancient site.
Tirunāgēśvaram ..	A place and large temple dedicated to Nāga-nātha-svāmi = '*Snake-lord-god*' near Kumbhakōṇam.
Tirupālturai	'*Sacred-milk passage*,' a place with a considerable but neglected temple on the river-channel near Pāpanāśam, and another at Śrīraṅgam: turai a ford (q.v.)
Tiruppanandāḷ ..	'*Sacred palmrya station*'; dāl or thāl for sthāla; a large Śiva temple 10 miles N.N.E. of Kumbhakōṇam. The place is remarkable for the groves of palmyras by which it is enveloped, as they are not common or large in the Kāvēri Delta. Another name of it is Tāḷaivanam, q.v. '*Toddy-tree-wood*.'
Tirupirambiyam ..	Commonly called Teru-perumaiyam (*Terruperrumbam* of A.S. 79). *See* Teru.
Tirupūvanam ..	'*Sacred flower-forest*'; there are other instances of this name in South India, one of them near Madura; the A.S. gives the name *Tirbovam* here, and *Trippawanam* there.
Tiruvaḍa marudūr ..	'*holy northern marudūr* (agricultural village), more properly Tiruviḍai-marudūr = '*holy-middle-marudūr*.' Sans. name is Madhyārjunam; iḍai = the middle.
Tiruvaḍi	Tiruvaḍi is a corruption for Tiruvaiyār = five rivers. Sans. name Pañchanadi, which also means five streams (= Pañjāb). Cf. Tiruvaḍi (? Tiru-vaḍigai) South Arcot.
Tiruvalañchuḷi ..	'*Sacred-right* (*hand*) *curl*,' the image of Vighnēśvara has its elephant trunk coiled to the right instead of (as usual) to the left. "Perruvalañjuli" of A. S., but there is a story of a whirlpool (Suḷi = whirl, curl, &c.) in the river, a branch of the Kāvēri here. A curḷ to the right is a fortunate mark. Compare the Svastika symbol.[10]

[10] At Vallam near Chengalpaṭ is a rock-cut figure of Gaṇēśa with the trunk similarly turned up to the right.

Tiruvālūr .. .. for Trivārur? Town of the three (viz., Brahmā, Vishṇu, Rudra); or Town of Tiruvaḷḷavar (author of the Kuraḷ). It is sacred to Śiva. Vaḷḷuvan is a low caste family priest. *See* Mūvalūr.

Tiruviṛimalalai .. 'Fair-eye-lily;' this is the '*Tirrimyaviali* of A.S. 79 and '*Tirrimiayala*' of Lambton's chart; viḷi the eye; commonly Terumallai, and vulgarly Terumuli.

Tiṭṭu .. .. .. same as Teḍal, &c., q.v. a mound, rising ground. Naḍu-tiṭṭu-Vināyakam, name of the island in the Kolladam at the 'Lower anaikat.' Naḍu-tiṭṭu = Middle-bank. Tiṭṭaguḍi on the Vellar.

Toṇḍai .. .. ..
Toṇḍarānpaṭṭu ..
Toṇḍi .. .. ..
Toṇḍai, the Toṇḍamaṇḍalam or Toṇḍa region, whose capital was Kāñchipuram, is now represented by the Pudukōṭṭai territory, under the Kaḷḷar prince still called Toṇḍimān, lying between Tanjore, Trichinopoly and Madura. Toṇḍi is a seaport south of the Tanjore border, and many other names contain Toṇḍa thereabouts; toṇḍu means serve, wait on; also antiquity, feudal service, &c. Cf. Τυνδις, said to be Tuṇḍi on the Malabār coast.

Toṛakkuḷi .. .. Perhaps *Herd-pit*, cattle-hollow, from toṛu a crowd, herd, &c., and kuḷi a pit, hollow.

Tōṭṭam .. .. .. a garden, (from tōṇḍu = dig) an enclosure (= kollai), orchard. Pūntōṭṭam a flower garden.

Tukkāchi .. .. For Turkkaiyāchi name of a horrible goddess or demoness. ? Durga.

Tulukkar .. .. the Tamil form of Turukar (fṛ. Hind. Turushka) Turks, *i.e.*, Muhammadans.

-tuṛai .. .. .. a landing place; the ford of a river, the haven of a sea: cf. "wick" and "fiord" a passage, ford, (= ghāṭ, and 'tīrath' a watering place), not at all uncommon in Tanjore which is overrun with fordable river channels. *See* Tuṛaiyūr, Āduturai, Tirupālturai, &c.

Tuṛaiyunḍakōṭṭai .. Tuṛaiyuṇḍa is a Kaḷḷar caste title.

Tuṛaiyūr .. .. = '*Ford town*.' *See* -tuṛai.

Tūttūr .. .. .. (?) From tūṛu bushes, low jungle, brushwood, with which the country here, N. bank of the Kolladam, is overspread; tūṛṛu (= tūttru) means scatter, spread abroad, strew. Cf. Tūttukkuḍi (Tuticorin) *Scattered habitation.*

Uḍaiyārpāḷaiyam .. Uḍaiyār = the wealthy, rich; a caste or tribe name (uḍai = wealth); pāḷaiyam a fief, an estate held under military (or feudal) tenure.

Ukkadai .. .. A suburb? for Ulkiḍai a hamlet, or Ulkaḍai an interior, uḷ = il = within; a house.

Uttukkāḍu .. .. ? "spring-field," an oozy place, from ūttru a spring, fountain; ūṛṛu = a spring (fountain) from ūṛu spring ooze, *exude.*

-Ūr	A country, town, village; township? From uru = be, exist, dwell. Cf. iru.
Vaḍa or Vaḍakku ..	northern (in opposition to ten, teṛku vulg. tekku south, southern) seems to be a more frequent prefix than ten, southern; and mēl western, than kīl eastern. Perhaps connected with S. ud = *up*, whence uttara the upper, northern.
Vaḍakkipaṭṭu	*Northern paṭṭu.*
Vaḍa-ūr	'*Norham*' or *Norton*; also Vaḍavūr and Vaḍuvūr = North town.
Vaḍavāṛ	'*North river.*' The southernmost of the Kāvēri irrigation channels, but so called perhaps because it passes immediately north of the town of Tanjore.
Vaittīśvaram	('Vydeesprum' of A.S.) for Vaidīśvarapuram, a place and temple between Māyavaram and Śiyāli dedicated to Vaidīsvar.
Valaṅgimān	a town or large village 5 miles S. of Kumbhakōṇam; a story is told that the place is named from a curse uttered here which would in English be something like "*cursed pimp of a deer!*" mān = deer, hart.
Val / Vaḷ	= ear, point, edge, beauty, &c., strength, speed; a hillock. — These syllables and vel vēl, veḷ., &c., very frequently occur in Tamil place-names.
Valam	Tam. a side, right side, a place, *e.g.* Ālivalam = *place of nectar;* Pulivalam = *tiger's lair*, Sikkiyavalam the *place of catching* (that tiger).
Vaḷarnthakaṇḍam ..	= 'Fertile part': vaḷaru = grow, increase, wax; and kaṇḍam a division. H. Khand.
Valaśakkāḍu	The 'Vullachadud' of A.S. 79 = '*Flight Jungle*;' Valaśai means a general removal or flight from home, for fear of an army in the field, hence a *retreat*; *refuge*; an encampment or settlement of refugees. Uncommon in Tanjore.
Vallam	Proper name of the place 7 miles south-west of Tanjore. Old Sans. name Indragiri = 'Mount Indra'. The legend is that Vallammāl, widow of Śrīkaṇṭha Chōḷa, after the battle of Chōḷamāligai, a Chōḷa capital near Kumbhakōṇam, being with child took refuge at Indragiri with Kapilamuni, who helped to restore the son born there, Kāla Kaṇṭha Chōḷan, to his father's kingdom, who then built a fort and named it Vallam after his mother. One derivation given is val (q.v.) a mound, hillock, Vallam being situate on high ground. There are many places of this name in Tanjore and South Arcot.
Vallam	In Tiruthārupūṇḍi, is said to be so called after Vallamuḍaiyan (= '*Lord of power.*')
Vāḷukkai or Vaḷukkai ..	There are two or more places of this name in Tanjore. A.S. 79 gives '*Valkā*' and '*Vaulkay*'; Vaḷukkai means slippery; vāḷukkai = living = felicity, prosperity.

Vāṇapaṭṭaḍai	(Bāṇapaṭṭrai) a gun-powder or fire-work factory; Vān a rocket and paṭṭaḍai, a stock, yard, &c.
Vāndaiyiṛuppu	Vāndaiyan a caste name of Kaḷḷars: iruppu = dwelling, abode, fr. iru = be, remain, &c.
Vaṇḍal	Silt, the mud of tanks: grit: affixed to village names in Rāmnād, from their being on a ridge of grit or gravel-drift, on the spoil bank of a tank, or on the grit banks or coarse sand drifts left in the waterway of a flooded river or breached tank.
Vāndarāmpaṭṭanam	(*Vaundramputnam* of A.S.) said to be a corruption of Vanathariyān-p., for Vānāsūran-paṭṭanam.
Vanni-paṭṭu	? from Vanni the suma tree (prosopis spicigera) a sacred tree, used for sacrificial fuel. There is a famous old specimen still alive in the Vṛidhāchalam temple.
Vāśal	Common use, but strictly, vāyil = gateway, portal, entrance, from vāy the mouth, and il a house. Paḷḷivāśal = meeting house, a school house; amongst the Muhammadans of the south coast = a mosque. The Kannaḍi (Canarese) form is bākilu, vulgo bāgalu.
Vaṭṭam	A circuit, round, &c., commonly applied in Tanjore to a group of villages under one inspecting official ? from viruttam, S. Vrutta, a round thing, vṛit, vritta = rounded, circular, and S. vaṭ vaṭa a rounded figure, circle. Cf. S. paṭ to surround, encompass. Compare paṭṭi a fold, and paṭṭanam, paṭṭinam and paṭṭicheri a town, a fishing village.
Vattirāṇḍu	?
Vayal	A rice field, an open field, or plain, (not the vāyil above, *see* Vāsal). Kan. bailu a plain, open field.
Vāykkāl	A water-course, canal, or channel for irrigation; in common use in Tanjore, same as Kālvāy, water-course, or aqueduct; Vēdapuri vāykkál.
Vēdāraṇyam	(the '*Vadarncum*' of A.S. 80) Sans araṇya = wilderness, 'Vēda-jungle;' there is a large Śiva temple, and celebrated Tīrtha or *watering place* here.
Veḷakkachiyamman	Proper name of a village tutelary goddess.
Veḷḷāḷaṅkāḍu	Veḷḷāḷan one of the Tamil agricultural tribe: veḷḷāṇmai husbandry, agriculture, ? from veḷḷam flood, and āṇmai ruling, master; an irrigator; kāḍu a jungle, forest, &c.
Vēlaṅguḍi	Veḷaṅkād, Velaṅkanni, and the like common but unexplained; Iḷankāḍu and yeḷakāṇḍu were referred to Iḷamaiyana, Iḷa and Yeḷavan meaning young, youthful, tender, &c. *See* Kan-kāḍu.
Veḷattūr	....
Vēli	A common affix to village names, meaning a wall, hedge, a ward; a measure about 5 acres, *e.g.*, Tirunelvēli (Tinnevelly); Aivēli = "25 acres." (?)

Vēḷi	a frequent prefix to village names meaning open field, a plain, the open, the air; Veḷipāḷaiyam the *camp or cantonment outside* (a fort or town); also used as a suffix, *e.g.*, Kuñjuvēḷi.
Vēḷūr	? from vēḷ a benefit, benefaction; vēḷavi a sacrifice.
Vēmbuguḍi	'*Margosa* (*or Nim tree*) *dwelling*'; many places in S. India are named from the Vēmbu or Vēppa-maram, the Nīm of N. India (Azadarachta Indica), which affords a delightful shade in hot weather; the '*Vamboogood*' of A. S. 79. The Margosa is not so very common in Tanjore.
Vennāṛ	a contraction for Vīnān-ār *Vínan's river*: cf. Kannānāṛ.
Veṅkaṭāmpēṭṭai ..	'*Vungadumpett*' A.S. 79 (cf. '*Vangadankal*' near Nāgūr). Vēṅgai = gold; Vēṅgaḍam = Tiru-pati, sacred to Vishṇu.
Veṭṭāṛ	'*The dug river*,' from veṭṭu = dig, and āṛu a river, or stream; a canal.
Veṭṭikkāḍu	'*cleared jungle*,' *a clearing*: veṭṭu = cut, hew, dig, &c., and kāḍu (q.v.) = wood, jungle.
Veṭṭiyār-paṭṭu, or -veṭṭu	*Veṭṭiyans' settlement or clearing*, possibly a mistake for Veṭṭiyār = *Veṭṭiyans' clearing*. The Veṭṭiyan is the *grave-digger* of the village community, from veṭṭu = dig.
Veṭṭukkuḷi	the mound of earth thrown up in order to lower a rice field to the proper irrigation level. Veṭṭu = dig and kuḷi a pit, hollow.
Veyilūr..	....
Viḍudhi	A lodging place, temporary abode; a common affix to many village names between Paṭṭukōṭṭai and Pudukōṭṭai, S.S.E. of Tanjore; (?) fr. viḍu = dismiss, let, release.
Vikkaramaṅgalam ..	*Vikram's maṅgalam*. Vikkiram is the Tamil form of Vikram. This name occurs repeatedly near the Kolladam, and was borne by one or more of the Chōḷa princes.
Vikkiramādi	*Vikram's great goddess* (*Mahā Dēvi*). Cf. Śō-ḷamādēvi, q.v.
Viḷāgam	a field of battle; a rather frequent suffix to place-names in E. Tanjore. Vilāsam = dalliance (? *pleasaunce*), and Vilāsam for viśālam = spaciousness, a saloon, pavilion.
Vināyakan teruvu ..	*Vināyakan's street*, in the Naḍu-tiṭṭu Vināya-kam, *Vināyakan's mound*, an island in the Kolla-ḍam at the lower anaikat.
Vīrānam	contraction for Vīra-Nārāyaṇam, a very large tank a few miles W. of Chidambaram, stretching from the Kolladam to the Vellār nearly, and fed by both rivers.
Vīranāthachēri	*Viranāthan's village*, the '*Vernadichari*' of A.S. 79.
Vīranaṭṭēri	the Vīrā(nārāya) nam-lake; ēri = a lake, sheet of water. *See* Vīrānam, and cf. Tirumattēri.
Vishvalūr	the Vashaloor of A.S. Two or more places of this name.

CLASSIFIED TABULAR STATEMENT OF THE CHARACTERISTIC PLACE-NAMES OF THE TANJORE DISTRICT.

Topographical and descriptive words in Tanjore place-names.

	-ār, āru	.. River.
	Kaḍal-	.. Sea.
	kāḍu	.. Jungle.
	-kāl	.. Channel.
	Kaḷam	.. Threshing floor.
	-kaṇṇi	.. Small channel.
	karai	.. Bank, shore.
	Kīḷ-	.. Eastern.
	-kollai	.. 'Close,' field.
E.	-kōṭṭagam	.. Tank, &c.
	Kūḍalūr	.. Meeting town.
†	-kuḷam	.. Tank.
	-kuḷi	.. Pit, hollow.
	madugu	.. Pool.
E.	Maṇal-	.. Sand.
	Marudūr	.. ? Agricultural village.
	-mēḍu, or -mōḍu.	Mound.
	Mēl-	.. Western.
S.E.	-mūlai	.. Corner ?
	-ōḍai	.. Tank, pool.
	-paḍugai	.. 'Flats.'
	Pāḷai	.. Barren.
E.	-paḷḷam	.. A hollow, valley.
	-paravai	.. (Water-) spread.
‡	Periya-	.. Great.
†	-poṭṭal	.. Barren.
	-pulam	.. Field.
	-pūṇḍi	.. Bush, shrubbery.
	Śiṛu-	.. Small.
	Ten- Teṛk-	} Southern.
	-tōppu	.. Grove.
	-tōṭṭam	.. Garden.
	-tuṛai	.. Passage, ford.
	Vaḍa-	.. Northern.
	-vanam	.. Wood, grove.
	Vayal	.. (Rice-) field.
	-vāykkāl	.. Water channel.
	-veḷi	.. Open (area), plain.
*	Veṭṭār	.. Dug-river, canal.

Place-names indicating Race, Tribe, Caste, and Religion of the People.

	Agrāram..	Brahman.
	Aiyan ..	Śiva.
	Aiyanār..	Demon, village god.
	Amman ..	Goddess.
‡	Āndi ..	Saiva-mendicant.
	-ēśvar ..	Īśvara, Śiva.
†S.W.	Iḍaiyan ..	Herdsman.
	Īśvaran ..	Saiva, of Siva.
‡	Kāḷi ..	Demoness.
†S.	Kaḷḷar ..	(Tribe).
	Kottan ..	(Caste).
E.	Karaiyān.	Fisherman, coast tribe.
†‡	Kuṛavan..	(Wild tribe).
	Māriyamman.	Demoness.
	Nāga ..	The cobra.
	Naṭṭān ..	? Countryman.
‡	Nāyakkan	Telugu title.
	Paḷḷan ..	Field laborer.
‡	Pāppān Pārppān	} Brahman.
‡S.	Pāmban..	Snake (-man).
	Paravan..	Seaboard tribe.
	Perumāḷ..	Vishnu.
	Piḍāri ..	Demon-goddess.
‡	Piḷḷai ..	(Caste).
	Piḷḷaiyār..	'Gaṇēśa,' son of Siva.
‡	Pulaiyan..	'Flesh-eater.' ?
‡	Pulavan ..	? Sage.
‡S.E.	Ṣāṇān ..	Toddy climber.
	Ṣāttan ..	Demon god.
	Śemmān ..	Currier.

* Signifies that the name is found only or chiefly in the delta.

† Do. do. do. outside the delta.

‡ Signifies that it is rare.

N., E., S.W. The cardinal direction in which it mainly occurs with reference to the centre of the delta.

A hyphen prefixed indicates a suffix; affixed, a prefix.

Place-names indicating Race, Tribe, Caste, and Religion of the People—(Continued).

‡	Śēṇiyan..	Weaver.	‡	Tulukkan.	Turk.
	Śeṭṭiyan ..	*Chetty*, merchant.	‡	Vaḍugan..	Northerner.
	Svāmi ..	Lord.		Valaiyan..	(Bird-) netter.
‡	Tādan ..	Vaishṇava mendicant.		Vanniyan.	(Caste) title.
‡	Teluṅgan.	Telugu.	‡	Veḷḷāḷan..	Tamil agriculturist.
‡	Tēvaḍiyāḷ.	Slave, =' Dāsi.'	†	Veṭṭiyan.	(Grave-)digger.

Words commonly affixed or prefixed to proper names of places, meaning abode, enclosure, hamlet, village, town, &c.

*N.	-agaram.	‡N.	-pākkam.
‡N.	-bākam.	†E.	Paṭṭachēri.
	-chēri.	‡	-paṭṭanam.
	-guḍi.	†W.	-paṭṭi.
†	-kāḍ.	S.	-paṭṭu.
	-kaḍai.	*	-pēṭṭai.
*N.	-kollai.		Putt-ūr.
†S., &c.	-kōṭṭai.	*	-pulam.
	kōvil.	*N.	Pūṇḍi.
	-kuḍi.		-puram.
†S.	kuḍikkāḍ.	‡†	-tāṅgal.
†	-kuḷam.	†S.	-teru(vu).
‡N.E.	-kuppam.		-tōppu.
†S.W., &c.	-kuṛichi.	*N.	-tōṭṭam.
	-maṅgalam.		-ūr.
†S.	-nāḍ.		-vanam.
	-nallūr.		-vāsal.
S.	-nattam.		-vaṭṭam.
	-nellūr.		-veḷi.
	-nilam.		-vēli.
‡	-pādai.	†S.	-viḍuti.

(For the particular meanings of these words, *see* list of place-names accompanying.)

Place-names that appear to be more or less peculiar to the Tanjore District, or unusually frequent there.

Agara-	.. As in Agaraputtūr.
-agaram	.. Puttagaram.
Agrāram	for Agrahāram, a village, quarter (of a town) or street of Brahmans.
Akāram	(as above)
Aiyanār	.. the S. I. demon king.
Álanguḍi	.. ? banyan hamlet.
Álattūr	.. banyan village.

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N., E., S.W. The cardinal direction in which it mainly occurs with reference to the centere of thē delta.

A hyphen prefixed indicates a suffix; affixed, a prefix.

Place-names that appear to be more or less peculiar to the Tanjore District, or unusually frequent there—(Continued).

	Anna-vāśal	
	Anna-chattram	= *food*-(giving)-*place.*
	Anna-sālai	
	Arasūr	= pipal village.
*	Āttūr	= river town.
N.	Chōḷapuram	= Chōla-town.
†S.	Karaiyānpaṭṭi	....
	Karuppūr.	....
	Kaṭṭaḷai	= grant, endowment.
	Kollai	= enclosure, field, 'close.'
‡*	Kōṇam	more common in South Arcot.
*N.	Kunnam	
E.	Kōṭṭagam	.. ? tank, &c.
*W.	Kottaṅguḍi	= Stone mason's dwelling.
	Kōvil- (or Kōil-) pattu.	'temple tithe.'
†	Kuḍikkāḍu	.. scattered huts.
‡	Kuṛuvāḍi	.. low quarter.
E.	Marudūr	.. agricultural village.
	Nāga, Nāgakkuḍi, N-maṅgalam, Nāganti, N-paṭṭanam, Nāgūr, &c.	
*N.	Ney-kunnam, N-kuppai, N-vāsal.	
*E.	-paḷḷam	.. a hollow, low ground.
S.	Pāmani, Pāmbanār, P-ōḍai.	
S.	-paṭṭu	.. most frequent between Paṭṭukōṭṭai and Tanjore.
†E.	Paṭṭa(na)chēri.	
‡	Piḍāgai or Puḍāgai	.. an inferior or sub-village, a hamlet.
*N.	Pūṇḍi	.. ? shrubbery, 'bush.'
	Śāttanūr	Śāttan (S. Śāstā = teacher) a name of Ayanār.
	Śāttamaṅgalam	
	Valanguḍi.	
‡	Vallam	.. ? a rising ground, eminence.
	-vaṭṭam	.. a circuit, group of villages.
	Viḷāgam	.. ? battle-field. Pavilion.
†S.	Viḍuti	.. ? lodge.
	Yaḷaṅkāḍ	.. ? Iḷaṅkāḍ, young forest. A plantation.

Words in Tanjore Place-names derived from the Animal (an.) or Vegetable (veg.) Kingdoms, with some examples.

ā (an) cow Āvūr, Āttalaiyūr.
āḍu (an) sheep Āduturai.
āl (tree) banyan Ālanguḍi, Ālankāḍ.
§ aḷisi-or aṛisi- Aḷisiguḍi.
arasu (tree) 'royal'; pipal, ficus religiosa.
atti (tree) fig, ficus racemosa.
atti bauhinia tomentosa.

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† Do. do. do. outside the delta.
‡ Signifies that it is rare.
A hyphen prefixed indicates a suffix; affixed, a perfix.
§ Signifies absent from the delta only.

Words in Tanjore Place-names derived from the Animal (an.) or Vegetable (veg.) Kingdoms, with some examples—(Continued).

§ āvārai (a bush) cassia auriculata. Ā.-kāḍ.
avuri (plant) indigo (i.-fera tinctoria).
chaya (plant). Cheyāttamaṅgai.
elumichai (tree) lime-fruit, citrus bergamia.
erumai (an) buffalo. Erumaippaḍugai.
īcham (tree) wild date, Īchaṅguḍi.
ilavam (tree) cotton tree, bombax.
iluppai (tree) Indian olive, Bassia longifolia (Mowah).
iñji (plant) (green) ginger. Iñjikkollai.
§ kāchā (plant) memecylon tinctorium.
kaḍambu (tree) eugenia racemosa.
kaḍugu (plant), mustard.
kāḷāñji (plant) mushroom, fungus.
kaḷḷi (plant) euphorbia, milk plant.
kapi (an.) monkey. Kapistalam.
S karaiyān white ants.
karumbu (plant) sugarcane.
kaṭṭāḷai (plant) aloe.
kattiri (plant) egg plant, solanum melongena ('brinjal.')
kīrai (veg.) greens. Kīrai-kollai.
kō (an.) cow. Kōmal, Kōvūr.
koḍi (creeper) betel-vine. Koḍikkālūr.
kokku (bird) crane, Kokkālaḍi.
koḷḷu (corn) gram.
mā (tree) mango. Māṅkāḍ, Māṅguḍi.
māḍu (an.) ox.
maḷalai (plant) lotus; Tiruviḷimaḷalai.
mān (an.) deer Māṅguḍi, Valaṅgimān.
mañjal (plant). turmeric Manjal kollai.
māviliṅgam (tree) (? cratœva Rox.) garlic pear.
mayil (an.) peacock. Mayilāḍi, Māyavaram.
mīn, fish Mīnavaippūr.
mundiri (tree) cashewnut tree (kāju).
nāg The cobra-snake. Nāgūr, Nāgamaṅgalam.
nari (an.) fox or jackal, Narikkuḍi
nāval (veg.) calyptranthes cariophyllifolia.
nāy (an.) dog.
nel (veg.) raw-rice, '*paddy*.' Nellūr.
nelli (tree) jungle gooseberry, phylanthus emblica.
neruñjil (plant). tribulus terrestris.
ney (? ghee). Neykunnam, Neykuppai, Neyvāsal.
nochi (plant). vitex negundo. Nochiyūr.
nunna (tree). Indian mulberry (morinda umbellata).
ōmai (plant or tree) Ōmakkulam.
pālai (tree). mimusops hexandra. Pālaipaṭṭi.
panai (tree) palmyra palm. Panaiyūr.
paṅgasātam (plant) lotus, ('tank-born').
parutti (plant). cotton. Paruttikkōṭṭai.
pēkkarumbu (plant) wild sugar cane.
pilā (tree) jack-fruit. Pilāvaḍi.
pirambu (plant). the cane (rattan).
puli or pili (an.) tiger. Puliyūr.

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§ Signifies absent from the delta only.

Words in Tanjore Place-names derived from the Animal (*an.*) *or Vegetable* (*veg.*) *Kingdoms, with some examples*—(Continued).

puḷi (tree) tamarind. Puḷiyañchēri.
pūnai (an.) cat Pūnai-kuṭṭi kāḍu.
pūvaraśu (tree). tulip tree (Portia).
sembu (veg.) rank-grass. Sembōḍai.
tālai (tree) *toddy* palm, palmyra. Tāl or Tār tree.
tāmarai (plant). lotus. Tāmarai-pulam.
tennai (tree) cocoanut. Tennaiguḍi.
tinai millet.
tolasai (plant) tulsi ? Tolasappaṭṭanam.
tuvarai (plant) lentil, 'dhāl.' Tuvaraṅkuṟichi.
vāgai (tree) acacia speciosā.
vāḷai (tree) plantain.
vaṇḍu wasp. Tiruvaṇḍuturai.
vanni senna tree, prosopis spicigera.
vēlam (tree) Vēlaṅguḍi.
vēmbu } (tree) margosa or nīm-tree.
vēppam } Vembugudi, Vēppanchēri.
viḷā (tree) wood-apple. Feronia-Elephantum.
vilvam (tree) bēl tree. Vilavanūr.

Common South Indian place-names not found at all, or but rarely, in Tanjore.

	achalam	.. mountain.		malai	.. hill.
	ānai	.. elephant.		manai	.. house.
§	bāḍi	.. place.		miṭṭa	.. estate.
	bākam	.. ?hamlet=pākkam	§	nāḍu	.. country.
	chāvaḍi	.. ang. 'choultry.'		nagaram	.. city.
	dāsi	.. slave girl.	§	Nāyakkan	.. Nayak.
	doḍḍi	.. cattle pound.	§	pāḍi	.. place.
	ēndal	.. tank.		pākkam	.. ? suburb.
§	ēri	.. lake.	§	pālaiyam	.. fief.
	giri	.. hill.	§	paḷḷi	.. village.
	guṇṭa	.. tank.		paḷḷivāsal	.. mosque.
§	iḍaiyan	.. shepherd.	§	panai	.. palmyra.
§	kāḍu	.. forest.		parambu	.. gravel-mound.
	kal	.. stone.		pāṟai	.. rock.
§	Kaḷḷan	.. Kallan.	§	paṟaiyan	.. 'Pariah.'
	kammāy	.. tank.	§	paṭṭanam	.. town.
	karaḍu	.. rocky mound.	§	paṭṭi	.. fold.
	kāval	.. watch, ward.	§	Reḍḍi	.. Reddi.
	kiṇaru	.. well.		śālai	.. hall.
	kōḍu	.. peak.	§	samudram	.. sea.
§	kōṭṭai	.. fort.	§	santai	.. fair.
	kuḍikkāḍ	.. huts.		tāṅgal	.. small tank.
	kuḍiyiruppu	.. habitation.		taḍāgam	.. big tank.
	kun(d)ru	.. hill.	§	teḍal	.. mound.
	kuppam	.. hamlet.	§	ūruṇi	.. tank.
§	kuṟichi	.. hamlet.		valaśai	.. "retreat."
	Kurumbar	.. shepherds.		vāḍi	.. yard.
	kuṭṭai	.. pond.	§	vēḍan	.. hunter.
	kūṭṭam	.. assembly.		viḷai	.. corn-field.
§	maḍam	.. college, 'math.'	§	viḍudi	.. lodge.

§ Signifies absent from the delta only.

SOUTH TANJORE.

The following remarks on the place-names of the country along the coast south of the Kāvēri Delta and as far as Rāmnād are based on the lists collected during the season 1876-77 in the absence of the writer:—

The country traversed to which alone the following remarks apply extends only some twenty miles inland from the coast of Palks Straits, the sinus Argaricus of the ancient geographers, and lies between the deltas of the Kāvēri and the Vaigai (? Vēghavati).

It is crossed by a few unimportant streams and water-courses, the principal of which is the southern Veḷḷār, draining the Toṇḍimān or Pudukōṭṭai Rajah's territory, he being the chief, and that the home, of the Kaḷḷar tribe.

Going north-eastwards from Rāmnād (Rāmanāthapuram = Lord Rāma's town) the home of the Maṛavar tribe, the country changes: the flat sandy tracts of the south coast of Madura are left behind, and so are the numerous large tanks and their long collecting channels, which are spread over the impervious black (cotton) soil, and the tracts of rice cultivation below them, characteristic of the alluvial tracts formed by the Vaigai, the river of Madura.

On entering south Tanjore, across the Pāmbanāṛ, though still low and flat, the slope of the country from the sea coast landwards increases from 2 to about 10 feet per mile. A succession of ridges and depressions, some of them 50 feet in depth, run from W.N.W. to E. S. E., the former well wooded with valuable trees, and the latter covered with patches of low-land cultivation (vayal).

This change of country is indicated or illustrated by the prevalent place-names.

There are few towns or large villages, and the village lands (grāmam) resemble townships, parishes, or communes, con-

taining many small hamlets, each bearing the village name, with a distinguishing suffix indicating the relative position of each within the village limits, and often having the suffix *teru* [11] = street, in place of the village name.

The following facts may be gathered from a short study of the names on the map (see Indian Atlas, sheet 80):—

(*a.*) The comparative absence of rivers, tanks and channels, &c., for irrigation.

(*b.*) The absence of hills, mounds, and rocks.

(*c.*) That this part of the country has been to a great extent jungle (*kāḍu* = wilderness, forest), and inhabited by rude unruly irreligious folk, rather pastoral than agricultural, such as Iḍaiyan, Kaḷḷan, Kuṛumban, Paḷḷan, Valiyan, Vēḍan, &c.

(*d.*) But there is a fair sprinkling of places termed Agrahāram, Chattram, Maṅgalam, Maḍam, Paṭṭanam, Pēṭṭai, Santai, Vayal, &c., indicating the presence of more civilized people, and telling of trade, agriculture, and brahmanical influence, especially in the more fertile parts, and along the coast where lies the track of the pilgrims to and from Rāmēśvaram.

Whilst the vegetable kingdom appears to contribute liberally to the onomatology of the district, the animal kingdom is but scantily represented by kokku the crane, mayil the peacock, nari the fox or jackal, and a few others.

These facts are further illustrated by the following groups of common appellative adjuncts to the proper names of south Indian places displaying those which are present and those which are absent, but are found either in the neighbouring districts or more generally throughout the Tamil country.

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[11] The suffix -*tara* in Malayāla has the same meaning and use.

The common descriptive words affixed to proper names of places prevalent in the southernmost part of the Tanjore District.

d.	[12] Chattram	(E.)	A rest-house for pilgrims.
c.	Kāḍu		A jungle, forest, wilderness.
	Kollai	(N.)	An enclosure, close field.
c.	Kōṭṭai		A fort, fortified village.
	Kuḍi		A house, cottage, habitation.
c.	Kuḍikkāḍ	(N.)	A hamlet (grove of cottages).
c.	Kuṛichi	(W. & N.)	An inferior village, hamlet of cottages.
	Nāḍu		A district, settled country.
	Nattam	(W.)	A country village, township.
d.	Paṭṭanam	(E.)	A town, especially a seaport town. In 50 miles of this coast there are 24 places called paṭṭanam.
c.	Paṭṭi	(W. N.W.)	A cattle fold; village of herdsman.
	Paṭṭu	(N.)	? A settlement; a village, or small town.
	Puḷḷi	(S.)	? A mark, cipher; ? a crest.
d.	Santai		A market, fair.
d.	Santai-pēṭṭai		A market-town.
	Teru	(N.)	A street.
	-Ūṛ		A town, township village.
	Vāśal	(E.)	A gate, entrance; ? a *port*.
	Vaṭṭam	(N.)	A circuit, group of villages.
d.	Vayal		A rice field, *paddy*-flat, plain.
c.	Veṭṭikkāḍu		A clearing: felled wood, *field.*
	Viḍuḍi	(N.N.W.)	A lodging; a grant;

Characteristic descriptive place-names prevalent in the adjacent districts, not found at all, or but rarely, in South Tanjore.

	Ālaṅguḍi	(N.)	Banyan (tree) house.
	Ālattūr	(N.)	? Banyan (tree) town.
a.	Āttūr	(N.)	River town.
	Chēri	(N. & W.)	Village, hamlet.
	Chey		Corn field; paddy fields.
a.	Ēndal	(S.)	Tank, hamlet.
a.	Kammāy	(S.)	Irrigation reservoir.
a.	-Karai	(N.E. & S.E.)	Bank, shore.
	Kariśal	(S.)	Black (-soil).
	Karuppūr	(N.)	? Black-town.
	Marudūr	(N.)	? Grain-land; corn town.
	Marava	(S.)	Marava tribe.
	Nallūr		Good-town.
	Nellūr		Rice-town.
	Ney-	(N.)	? Weaving-(village).
	Nilam	(N.)	Land, particular soil.
a.	Ōḍai	(N. & S.)	Water-course, ditch, tank.
	Paḷḷi	(W.N.W.)	Village, small town.
	Poṭṭal	(S.)	Barren soil, brackish ground.
	Pūḍi, pūṇḍi	(N.E.)	? Shrubbery, grove.
a.	Taravai	(S.)	Waste, a salt marsh.
a.	Tuṛai	(N.E. & S.E.)	Ford, passage, landing place.
a.	Ūruṇi	(S.)	Village tank.
	Vaṇḍal	(S.)	Deposit of silt, sandbank.
	Viḷāgam	(N.E.)	? Field of battle.

[12] See overleaf for meaning of letters prefixed.

The following common descriptive place-names, so prevalent elsewhere in Southern India, are absent or very rare in South Tanjore :—

Chēri, doḍḍi, kōvil, kuppai, kuppam, pākkam, pāḷaiyam, puram, vāḍi and valasai, the commonest affixes to the proper names of villages and hamlets in the Tamil country.

(*a.*) Āṛu, ēri, guṇṭa, kāl, kuḷam, kuṭṭai, samudram, and vāykkāl, the common affixes meaning river, lake, pond, tank, and channel or canal.

(*b.*) Kal, karaḍu, kunnam, mēḍu, pāṛai, parambu, teḍal, tiṭṭu, signifying rock, mound, hillock, mount, as well as giri, kuṇḍṛu and malai, meaning hill, mountain.

The letters *a*, *b*, *c*, and *d* prefixed refer to the abovenamed inferences, *viz.*, (*a.*) the absence of great sources of irrigation ; (*b.*) the absence of hills and rocks ; (*c.*) the want of cultivation in the country and people ; and (*d.*) that a proportion of names indicating the presence of a more northern culture and civilization still does exist.

The letters N.E., S.W., affixed indicate the direction with reference to the centre of the tract under notice in which the word or name mostly occurs.

Besides the excessive frequency of the affix paṭṭanam on the coast noticed in the first group, the following particulars may be noted ; the southern limit, and maximum frequency of the affix paṭṭu occur together in the northern part of this tract, between the towns of Tanjore, *Paṭṭu*-kōṭṭai and Pudukōṭṭai ; also that the affix viḍudi seems to be peculiar to the same locality, or rather nearer to Pudukōṭṭai.

CLASSIFIED LIST OF COMMON TAMIL PLACE-NAMES AND TAMIL WORDS FOUND IN THEM; TRANSLITERATED FROM THE TAMIL.

I.

Prefixes.

Aḍichēri	suburb, hamlet.
Agara	chief.
Anna	(cooked) food.
Aṟam, Aran-	virtue, charity = dharm.
Aṟasan	king, rajah.
Aṟu	six; (a river).
Arun	beauty, a fortress.
Chinna	small.
Iḍa-	left (side).
Karu, Kār	black.
Kāṭṭ-	wild, jungle.
Kāval	ward, guard.
Kīl-ē	eastern, lower.
Kuruvi	little bird.
Koḍai	alms.
Maṇ, Mad-	soil, sandy.
Mani	gem, bell.
Mēle, Mērku	western, upper.
Muḍi	crown, knot.
Mūrtti	idol, image.
Muttu	pearl.
Naḍu-	middle.
Nallu, Nan-	good, fair.
Neḍu-	long.
Ney-?, Nesavu	weaving.
Pāl	milk.
Paḷa	old.
Periya, Peru	great.
Pin (nai)	behind.
Pon (nai)	golden.
Pū, Pushpa	flower.
Pudu, Puthiya	new.
Puram	side, outside.
Rāśi	heap.
Se, sen, Śegappu	red, right.
Śī for Śrī	auspicious, good = tiru.
Śiru, Śitt-	small, little.
Śivappu	red.
Śri, Śī	fortunate, good.
Sundara	beautiful.
Ten, Terku	southern.
Tēr	idols car.
Tiru (= Śrī)	holy, auspicious.
Ul-	within.
Vaḍa-	northern.
Vala-	right side.
Veḷ, Veṇ-	white, silver.

II.

N.B.—*In these columns the article as is omitted.*

Affixes.

Agrahāram	brahman's village.
-ālayam	place, temple.
ambalam	court, hall.
-andal	? for ēnthal = highness, a tank.
aramanai	king's house, palace.
chattram	rest-house.
chāvaḍi, Anglice	'choultry,' Native rest-house, &c.
chērī	village, gathering.
chey	rice field.
doḍḍi	pen, pound.
ellai	boundary.
gōpuram	tower, spire.
grāmam	village, parish.
iḍam	place.
iruppu	dwelling.
kaḍai	end, market.
kaṭṭalai	grant, endowment.
kaṭṭu	tie, building.
kiḍai	fold, yard, 'kheddah.'
kiḍaṅgu	store, tank, 'godown.'
kōil, kōvil	temple.
kollai	close, field.
kondān	? a title.
kōṭṭagam	pond, temple.
kōṭṭai	fort.
kōṭṭam	stable, cowshed.
koṭṭāram	big shed, portico, pavilion.

II—(*Continued*).

kuchu	cottage, hut.
kuḍi	house, dwelling.
kuḍikkāḍ	cottages, huts, &c.
kuḍiśai	cottage.
kuḍiyiruppu	habitation, hamlet.
kuṉṉam	? a mount, hillock.
kuppam	hamlet of low folk.
kurichi	hamlets of poor people.
kuruvāḍi	sub village or hamlet.
kūṭṭam	village, assemblage.
maḍam	college, 'math.'
manai	mansion, house.
mandai	herd, collection.
maṇḍalam	region, country.
maṇḍapam	open court or hall.
maṅgalam	flourishing village.
māniyam	freehold.
marudūr	agricultural or rice-growing village.
maśudi, musjid	mosque.
miṭṭa, muṭṭa	freehold, estate.
mūlai	corner, nook, house.
nāḍ, nāḍu	district, country.
nagaram	big town, city.
nallūr	'good ville,' fair-town.
nattam	common village site.
nilam	ground, soil, land.
-pāḍi, pathi	part, share.
-pāḍi	village, row.
-pākkam	village.
pālaiyam	a fief, canton.
paḷḷi	a village, town.
paḷḷivāsal	a mosque, school.
-paṅgu	a division, share.
paraichēri	outcaste's hamlet, suburb.
paṭṭanachēri	a fishing village.
paṭṭanam	town. A seaport town.
paṭṭi	hamlet, cattle fold.
paṭṭu, paṭ	village.
-pēri	?
-pēṭṭai	village (with shops).
pidāgai, puḍāgai	sub-village, or hamlet.
poḷi	boundary.
pūḍi	village.
-puḷḷi	hamlet, spot.
pūṇḍi	(grove), village.
pur-a,-am,-i	town, city.
sālai	court or public building, hall.
santai	fair, (weekly) market.
sūlai	kiln, furnace.
talai	head, a place.
talam, sthalam	place, station.
teru(vu)	a street.
ūr, ūru	town or village.
vāḍa	a ward, quarter.
vāḍi	enclosure, yard.
valasai	'retreat,' refuge.
-varam	for puram, a town.
vās, vāsi	dwelling, abode.
vāśal (-vāyil)	doorway, port.
vati-pathi	abode.
vaṭṭam	circuit, group.
vayal	a rice-field, flat.
vēli	a hedge, a 5-acre field.
vellai	a corn-field.
viḍai	? grant, leave, permit.
vīḍu	house.
viḍudi	lodge.
vilāgam	field of battle ?
vilai	fertile field.
vīdi, vīdhi	street.

III.

Topographical.

achalam	mountain.
araṇyam	jungle, waste.
āru, ār	river.
chey	(rice) field.
chōlai	grove, thicket.
ēndal	tank, reservoir.
ēri	lake, mere sheet of water.
gaṅgai	water, a *river*.
giri	hill.
kā	wood, grove.
kaḍal	sea.

Note.—The names or words are transliterated from the Tamil, and not given according to the Madras Government list of 20th August 1878.

III—(*Continued*).

kaḍavu ..	.. passage.
kaduvu, kathavu.	door.
kāḍu, kāḍ	.. jungle, waste, wild.
kal, kallu	.. stone, rock.
kāl ..	.. limb, channel, (¼).
kalam ..	.. threshing floor, arena.
kalar ..	.. barren soil.
kammāy ..	.. tank.
kaṇavāy ..	.. pass, defile.
kanni ..	.. channel, water-course.
karaḍu ..	.. rugged mound.
karai ..	.. bank, shore.
kāyal ..	.. lagoon.
kēṇi ..	.. tank, pond.
kebi, kugai, kavi..	a cave, cavern.
kiṇaru ..	.. well.
kōḍi ..	.. point, cape.
kōḍu ..	.. horn, ridge, peak.
kombai ..	.. basin, valley.
kōṇam ..	.. corner, nook.
kōvalam ..	.. cape, headland.
kūḍal ..	.. junction, confluence.
kuḷam ..	.. tank, reservoir.
kuḷi ..	.. pit, hole.
kuṇḍu ..	.. ball, boulder, rock.
kuṇ(ḍ)ru	.. hill, also kuṇṇam.
kuppai ..	.. heap, hillock, dunghill.
kuṭṭai ..	.. tank.
madai ..	.. sluice.
maḍi ..	.. (rice) field, bed, plot.
maḍu ..	.. pool, water, hole.
madagu ..	.. sluice, drain, conduit.
malai ..	.. hill.
maṇ ..	.. earth.
maṇal, maṇa-	.. sand.
mēḍu, mōḍu	.. mound, eminence.
moṭṭai ..	.. bald, bare.
muḍi ..	.. crown, crest.
mugam ..	.. mouth, face, entrance.
munai, mundal	headland, cape.
ōḍai ..	.. pool, water-course.
paḍugai ..	.. flats (by river side).
pāḷai ..	.. barren.
paḷḷam ..	.. low ground, a hollow.
pārai ..	.. rock.
parambu	.. stony mound, gravelly waste.
paravai ..	.. expanse, sea.
-pēḍu ..	.. upland.
-pēri ..	.. ?
polai ..	.. a field.
pondu ..	.. hole, cave.
pottai (putti)	.. mount, hillock.
poṭṭal ..	.. barren ground.
pulam ..	.. field.
pūṇḍi and pūḍi	.. shrubbery, garden
samudram	.. water gathering, sea, lake.
śikaram ..	.. pinnacle, spire.
taḍāgam	.. big tank, reservoir,
talai ..	.. head, source, site.
tāmarai ..	.. tank with lotus, 'lily-pool.'
tāṅgal ..	.. support, a tank.
taṇṇi(r)	.. water.
tarai ..	.. place, terrace.
taravai ..	.. salt swamp, waste.
taṭṭai ..	.. platform shelf.
teḍal ..	.. mound, rising ground.
tēri ..	.. drifting sand, waste.
tiḍar, tiṭṭu	.. hillock, mound.
tiṇṇai ..	.. bank, mound.
tīrtham ..	.. bathing, or watering place.
tīvu ..	.. island (dvīpa)
tōppu ..	.. grove (? stūpa).
tōṭṭam ..	.. garden.
turavu ..	.. well.
turai ..	.. passage, ford, landing.
Ūruṇi ..	.. pond, tank.
Ūtt(r)u ..	.. spring, fountain.
Val ..	.. power, a mound.
Vala(m) ..	.. right (hand).
vanam ..	.. a wood, grove, jungle.
vaṇḍal ..	.. mire, silt.
varai ..	.. slope, border, hill.
vāykkāl ..	.. water channel.
vēḷi ..	.. the open, outside, area.
vēli ..	.. hedge, 5-acres of land.
veḷḷai ..	.. whiteness, a corn-field.
veḷḷam ..	.. flood, inundation.
vēṭṭar ..	.. canal (dug-river).
vilāgam ..	.. battle-field.

IV.

A FEW COMMON TAMIL PROPER NAMES.

Ethnological, Historic, Religious, &c.

Āchāri .. preceptor 'Worshipful.'
Aiyan .. pastor, 'guru,' Saiva brahman.
Aiyanār .. Demon god Hari-hara.
Aiyar .. brahmans (Saiva).
Ammai .. Pārvati; (small-pox).
Amman .. lady, goddess.
Āṇṇi .. saiva mendicant.
Arasappalli .. (caste).
Asuran .. demigod, demon.
Āvuḍaiyār .. ox owner, Lingam (or Siva).
Āyan .. cowherd, pastor.
Chakkiliyan .. currier.
Chetti .. merchant (Sēṭh).
Dāsi .. slave girl.
Dēvēndra .. god of heaven, Indra.
Dēvi .. goddess.
Ellamman .. a tutilary demoness.
Iḍaiyan .. herdsman.
Īśāna .. regent of the N.E.
Īśvara .. supreme lord. Siva.
Kaḷḷan .. Kalla casteman.
Kāli .. Pārvati, consort of Siva.
Karaiyān .. shoreman, coaster.
Kāṭṭān .. a mighty demon.
Kāṭṭēri .. a fearful demoness.
Kauṇḍan .. Gauḍa tribe man.
Kōn, Kōnān .. shepherd king, pastor.
Kottan .. mason, bricklayer.
Kṛishṇa .. Vishṇu Avatāra.
Kurumban .. shepherd tribe.
Kuṛuvan .. wild 'gipsy tribe.'
Kuśavan (Kuyavan) .. potter.
Labbe .. S. I. Muhammadan.
Latchmi .. (Lakshmi).
Liṅgam .. Phallic emblem of Siva.
Māpillai .. son-in-law (*Moplah*).
Maṛavan .. Maṛava tribe-man.
Māriyamman .. Death, goddess.
Mudali .. a Veḷḷāḷar caste title.
Mūrtti .. form, idol, image.
Nāga .. cobra snake.
Nārāyaṇa .. name of Vishṇu.
Nāṭṭān .. countryman, rustic.
Nāyakkan .. of Telugu race: a title.
Oṭṭan .. (tank-) digger, builder.
Paḷḷan .. low caste cultivator.
Paḷḷi .. a low caste laborer.
Pāmban .. snake wearer.
Pāppān .. Brahman.
Paṛaiyan .. musician, *Pariah* outcaste.
Pāramēśvara .. supreme lord.
Paravan .. a low caste of S. coast.
Pārppan .. Brahman = Pāppān.
Perumāl .. great one, Vishnu.
Pey .. demon, devil.
Piḍāri .. demoness.
Piḷḷai .. a Vellālar caste title.
Piḷḷaiyār .. the honorable son (of Siva).
Pulaiyan .. ? flesh eater.
Rāda .. Kṛishṇa's mistress.
Rāma .. Vishṇu Avatāra.
Reḍḍi .. a Telugu tribe.
Rudra .. Śiva.
Śāliyan .. weaver.
Śāman .. ? sraman.
Śāṇān .. toddy climber, Shānār.
Śāttan .. Aiyanār,
Śāttāni .. Vishṇu mendicant.
Śavunar .. ? (Jaina).
Śemmān .. shoemaker, currier.
Śēṇiyan .. weaver.
Siva .. the supreme, Īśvara.
Sōmēśvar .. moon lord.
Sonagan .. Yavanan *q. v.* ? Greek.

IV.—(*Continued*).

Śrī	auspicious, Lakshmi.
Subramaṇya	God of war.
Svāmi	Lord.
Tachchan	carpenter.
Tādan	Vishṇu mendicant.
Telungan	Telugu.
Tēvan	Maṛavar caste title.
Tīyan	Islander, low caste.
Tōṭṭi	scavenger.
Tulukkan	Turk.
Vaḍugan	northerner, Telugu.
Valaiyan	netman, bird-catcher.
Vāṇigan	merchant, banyan.
Vāṇiyan	oil-monger.
Vaṇṇān	washerman.
Vanniyan	Palli caste man.
Vēḍan	hunter.
Veḷḷāḷan	Tamil cultivator tribe.
Veṭṭiyān	grave-digger, &c.
Vināyaka	son of Siva.
Vishṇu	god, the preserver.
Yādavan	a tribe.
Yavanar	Greeks most likely Arabians.
Yēnādi	a tribe also called Irular.

V.

NATURAL PRODUCTIONS.

Flora.

Āl	banyan.
Arasu	pipal.
Arisi	rice.
Atti	fig (racemosa).
Ātti	bauhinia tomentosa.
Āvārai ? āvirai	shrub (cassia auriculata).
Avuri	indigo plant.
Elumichai	lime fruit, lemon tree.
Īcham	wild date.
Ilavam	cotton tree, bombax.
Illuppai	Indian olive, bassia longf.
Iñji	ginger plant.
Kaḍambu	tree, (Eugenia racemosa).
Kaḍugu	mustard plant.
Kalli	milk plant, Euphorbia.
Karumbu	sugar cane.
Kattari	eggplant (solanum mel).
Kīrai	greens.
Koḷḷu	kulti, gram, horse corn.
Mā, mān	mango.
Malalai	lotus, lily.
Mañjal	turmeric.
Māviliṅgai	garlic pear, Cratœva Rox.
Mundiri	cashew-nut tree.
Mūṅgil	bamboo.
Nāval	jambo tree Calyptranthes.
Nel	(Raw) rice, paddy.
Nelli	jungle gooseberry
Neruñjil	plant, Tribulus terrestris.
Nochi	plant, Vitex negundo.
Nunna	Morinda umbellata.
Ōmai	the mango.
Pālai	tree Mimusops hexandra.
Panai	palmyra-palm.
Parutti	cotton plant.
Pilā	jack fruit tree.
Pirambu	rattan cane.
Puḷi, puḷiya	tamarind.
Pūvaraśu	tulip tree, portia.
Tāmarai	lotus.

V—(*Continued*).

Tēnnai ..	.. cocoanut.
Tolasai ..	.. tulsi plant.
Tuvarai ..	.. lentil (dhāl).
Vāgai ..	.. siras tree (acacia spec.).
Vanni ..	.. suma tree, prosopis spic.
Vēlam, vēl-	.. thorn.
Vēmbu, vēppam	margosa, nīm.
Vilā ..	.. wood apple (feronia E.).
Vilvam ..	.. bēl-tree.

VI.

Fauna.

ā ..	.. cow.
āḍu ..	.. sheep.
ānai ..	.. elephant.
erumai ..	.. buffalo.
gō ..	.. cow.
kākkai ..	.. crow.
kaḷugu ..	.. eagle.
kaḷuthai ..	.. ass.
kapi ..	.. ape.
karaḍi ..	.. bear.
kokku ..	.. crane.
kōḷi ..	.. fowl.
kōnāy or onāy	.. wolf.
kudirai ..	.. horse.
kuri ..	.. sheep.
kuruvi ..	.. little bird.
kuṭṭi ..	.. kid, kit, cub.
māḍu ..	.. ox.
man ..	.. deer.
mandi ..	.. monkey.
mayil ..	.. peacock.
mīn ..	.. fish.
musal, muyal	.. hare.
nāga ..	.. cobra snake.
nari ..	.. fox, jackal.
nāy ..	.. dog.
paśu ..	.. cow, cattle, (*bos, pecus.*)
pili or puli	.. tiger.
pūnai (pūśai)	.. cat (Puss).

R. B. Branfill.

IV.

A BRIEF SKETCH OF THE YERUKALA LANGUAGE AS SPOKEN IN RAJAHMANDRY.[1]

The Yerukalas do not seem to have any distinctive tribal or national name. In conversation with each other they call themselves "Kuluvuru," evidently from the Sanskrit "kula," merely signifying "our people," while to strangers they speak of themselves as Yerukalavaru, a name most probably given them by their Telugu neighbors (Telugu ఎరుక) in allusion to their supposed skill in palmistry, which they practise as a means of livelihood. The Yeruka in question was not able to say when his people settled in Rajahmandry. He only knew that a long time ago they came from the west and have been living here in the same place and in the same way for several generations. For a livelihood they make baskets, tell fortunes, and breed pigs for their own use and for sale. They know nothing of agriculture or keeping

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[1] This brief sketch was communicated to the Editor by Colonel R. M. Macdonald, the Director of Public Instruction in Madras. The following is a letter addressed to Colonel Macdonald by Mr. Metcalfe, Principal of the Rajahmandry College:—

"Sir,—During your visit to Rajahmandry a few months ago you were somewhat interested in a little colony of Yerukalas, located in the suburbs, and suggested that possibly an examination of the peculiar language spoken by these isolated groups of an apparently distinct race might serve to determine their origin and the affinity they bear to the other races of Southern India. Accordingly, on the occasion of a visit from the Rev. J. Cain, C.M.S., who has bestowed much attention upon the Koï languages in the neighborhood of Dommugadem, I arranged an interveiw between a Yeruka who has the reputation of being the best-informed member of his community, and two of my Assistants, Messrs. A. G. Subramanyam Iyer, B.A., (Vernacular: Tamil) and P. Strinivasa Rao Pantulu, B.A., (Vernacular: Telugu and Kanarese) who under Mr. Cain's direction asked the man a series of questions, the answers to which they have been at some pains to embody in the accompanying account. This I think you will find interesting, and it may be of use for the purpose of comparison with the results of similar enquiries conducted in other localities at Guntur, for instance, where I hear there is a Yerukala settlement."

cattle, their mode of life in this respect being amusingly evidenced by their possessing only one or two generic names for sheep and cattle, while their vocabulary is well supplied with words indicating very subtle distinctions between different kinds of pigs. Their customs are generally of a very simple character. They burn their dead with little ceremony, and at their marriages make a feast, of which plentiful libations of arrack and toddy constitute the chief feature. They live principally on cholum, raggy, preferring rice when they can afford it; but they do not disdain the mongoose, the guana, and even the common cat as an article of diet. They have no written language, nor have they any songs of their own. Such as they do sing are Telugu songs. The information obtained from the Yeruka in question is perhaps hardly sufficient to render possible any definite rules with regard to the structure and idiom of the language. The few observations here made may, therefore, need considerable modification, but there appears to be little doubt that the language belongs to the Dravidian family. The following collection of words and phrases seems to show conclusively that of these languages it bears the closest affinity to Tamil, although possessing words allied to Telugu and Canarese. It is of course difficult to say whether the few Telugu words, phrases, and case-endings that are to be found in it really belong to it or have unconsciously crept in during the long sojourn of this community in the Telugu districts; but this could be ascertained by comparing the language of this settlement with that spoken by Yerukalas in some Tamil district.

The principal points in which Yerukala agrees with Tamil are—

(1.) A large number of words denoting objects of primary importance correspond with Tamil (*see* Table I).

(2.) The plural terminations *mar*, *ru*, *ga*, *gal*, *lu* are Tamil terminations or their modifications, the first two being restricted to rational nouns as in Tamil and the rest to irrational nouns. *Mar* is suffixed to nouns, signifying relations, and is also used as an honorific termination.

(3.) The numerals *ondu*, &c., are for the most part corruptions of Tamil words.

(4.) The Yerukala pronouns bear resemblance to Tamil and Canarese pronouns.

(5.) Yerukala forms its infinitive by adding *a* to the root and the verbal noun by adding *ṭam*, టం or *ḍam*, డం to the infinitive, in which case it resembles Telugu.

(6.) The negative particles *illa*, ఇల్ల and *alla*, అల్ల are Tamil or Canarese words.

(7.) As in Tamil the present and past tenses are formed by adding *ikkir*, ఇక్కిర్ or (*kiru*, కిరు) and *ta* త (*da* డ &c.) respectively to the simple forms of words.

(8.) The future is formed by adding *k* to the root, and this is sometimes found in old Tamil words.

(9.) The demonstrative and interrogative pronouns *adu* అదు, *idu* ఇదు, *edu* ఎదు are Tamil words.

Adjectives are formed by adding *a*, *e* either to the crude forms, or the crude forms modified by doubling the final consonant.

In the Yerukala language there is no inflexion for gender. The neuter noun which ends in డు stands for both masculine and feminine.

TABLE I.—*Words allied to Tamil.*

No.	English.	Yerukala.	Tamil.
1	Father.	ta̤pan.	takappan.
2	Mother.	tāi.	tāi.
3	Papa (familiarly).	āva.*	appa.
4	Mamma do.	amma.*	amma.
5	Elder brother.	anna.*	aṉṉa.
6	Younger brother.	tembi.	tambi.
7	Elder sister.	akka.*	akka.
8	Younger sister.	teviśi.	taṅgacci, taṅge.
9	Wife.	poṇḍu.*	peṇḍāṭi, peṇḍu.
10	Grandfather.	tātam.	tāta.
11	Son.	moganu.	makan.
12	Daughter.	mogulu.	makaḷ.
13	Brother-in-law.	meccunu.	maccinan.
14	Father-in-law.	ma̤ma.*	ma̤ma.
15	Son-in-law.	merumoganu.	marumakan.
16	Daughter-in-law.	merumogulu.	marumakaḷ.
17	Grandson.	pētam.	pēran.
18	Granddaughter.	pēti.	pētti.
19	Ear.	ka̤dāna.	kādu.
20	Eye.	kan.*	kaṉ.
21	Mouth.	vāi.	vāi.
22	Nose.	mūka̤na.	mūkku.
23	Hand.	kei.	kai.
24	Leg.	kāl.*	kāl.
25	Tongue.	nāk.	nākku.
26	Tooth.	pelu.*	pal.
27	House.	ūḍu.	vīḍu.
28	Entrance.	va̤sali.	vāśal.
29	Ox.	māḍu.	ma̤ḍu.
30	Sheep.	a̤ḍu.	a̤ḍu.
31	Pig.	panḍri.	panḍri.
32	Cat.	pūne.	pūne.
33	Sun.	proddu.*	poj'udu.
34	Moon.	nela.	nela.
35	River.	ār.	āru.
36	Tank.	ēri.	ēri.
37	Water.	tanni.	taṉṉi.
38	Well.	gendri.	kiṉaru.
39	Earth.	terra.	tarai.
40	Fruit.	pagam.	paj'am.
41	Fish.	mīna.	mīn.
42	Crane.	kokku.	kokku.
43	Crocodile.	modala.	modalai.
44	Dog.	nāi.	nāi.
45	Rice.	eriśi.	ariśi.
46	Rice (boiled).	sōru.	śōru.
47	Chollum.	cōḷam.	chōḷam.
48	Raggy.	kēvuru.	kēj'viraku̇.
49	Tree.	maram, śedi.	maram.

* The words marked with a star are as well connected with Telugu.—G. O.

No.	English.	Yerukala.	Tamil.
50	Palmyra tree.	pananjeḍi, panama-ram.	panamaram.
51	Sweetness.	tīpu.*	tittippu.
52	Sour.	puli.	puḷi.
53	Bitter.	keccu.	kaśappu.
54	Whiteness.	valupu.	veḷuppu.
55	Black.	kar.	kar.
56	Eat.	unu.	uṇu.
57	Drink.	kuḍī.	kuḍi.
58	Beat.	mottu.	mottu, aḍi.
59	See.	pāru.	pār.
60	Hear.	keru.	kēḷu.
61	Walk.	naḍu.*	naḍu.
62	Run.	ōḍu.	ōḍu.
63	Tell.	sol.	śol.
64	Sleep.	orugu.	uraṅgü.
65	Kill.	kollu.	kollu.
66	Laughing.	śiruguṭam.	śirikkiradü.
67	Weep.	aidu.	aj'u.
68	Come.	vā.	vā.
69	Go.	pō.*	pō.
70	Mongoose	kīri.	kīri.
71	Squirrel.	ani.	aṇi.
72	Rat.	eni.	eli.
73	Rain.	maga.	maj'ai.
74	Hair.	moguru.	mayir.
75	Stone.	kellu.	kallu.
76	Great.	bēru.	peri.
77	Small.	ciru.	śiru.
78	Yellow.	mañja.	mañja.
79	Leaf.	ela.	ele.
80	Branch.	kommu.*	kombu.

TABLE II.—*Pure Yerukala Words, or those allied to Telugu.*

English.	Yerukala.	English.	Yerukala.
Unripe fruit.	lētakāpanam.	Kick.	ogi. Canarese odi.
Bark.	beraḍu.	Call.	agi.
Mountain.	Koṇḍa	Knit.	caccu.
Stream.	nāg.	Uncle.	soṭṭam.
Husband.	monāgam.	King.	karagada.
Sister-in-law.	naṅga.	Person.	keruvu.
Knife.	kolli.	Boy.	guṇṭam.
Head.	ondu.	Male.	āvala.
Finger.	ēlu.	Seven.	ōgu.
Neck.	kegam.	Toddy.	ōḍu.
Mat.	cāpa.	Salt.	nōnam.
Plough.	nāgali.	Snake.	tōna.
Bird.	kuñju.	Sunshine.	oga.
Grass.	gaḍḍi.	Red.	erra.
Foot or footstep.	aḍugu.		

* The words marked with a star are as well connected with Telugu.—G. O.

Plural endings are galu, ga, lu, māru, ṛu. Some nouns form their plural by adding *galu* to the singular, as—

kegam	..	kegaṅgalu.	māḍu	..	māḍugalu.
āḍu	..	āḍugalu.	natchatram	..	natchatraṅgalu.
kāpaṇam	..	kāpānaṅgalu.			

The final *lu* is generally omitted as in the following words:—

ūḍu	..	ūḍuga.	nāk	..	nāgga.
kuñju	..	kumjuga.	pellu	..	pelluga.
celug	..	celugga.	oṅḍu	..	oṅḍuga.
kōlu	..	koluga.	bhujam	..	bhujaṅga.
mīna	..	mīnaga.	ēlu	..	ēluga, erakalu.
modala	..	modalaga.	kālu	..	kāluga.
cūpānam	..	cūpānañga.			

Nouns forming their plural by adding *lu*—

kei	..	keilu.	ēr	..	ērlu.
nāi	..	nailu.	vasali	..	vasallu.
pūna	..	pūnlu.	kīri	..	kīrlu.
paṇḍri	..	paṇḍrilu.	ani	..	anilu.
ār	..	ārlu.	eni	..	enilu.

Nouns whose plurals are formed by adding māru to the singular—

tāpan	..	tāpamāru.	teviśi	..	teviśimāru.
āva	..	āvamāru.	poṇḍu	..	poṇḍumāru.
temci	..	temcimāru.	monāgam	..	monāgamāru.
annam	..	annamāru.	maganu	..	makkamāru.
tātam	..	tātamāru.	pētam	..	pētamāru.
appa	..	appamāru.	pēti	..	pētimāru.
akka	..	akkamaru.			

Nouns forming their plural by adding ru to the singular—

mensam .. mensaru.

Gender.

This language has no grammatical gender, as there are no terminations for the masculine and the feminine. The neuter noun stands for all the three genders.

The neuter singular suffix is *ad* and the plural suffix is *ayyalu, vāradu, vārayyalu.* However the gender is denoted by (1) different words, (2) by prefixing to the words denoting gender, as—

poṇḍu	..	monāgam.
teñci	..	teviśi.
āvalakēruvu	..	paidikēruvu.

Case.

As in Sanskrit and Telugu there seem to be eight cases in the Yerukala language. The case terminations appear to be pure

Telugu case endings except keivi, kōvi, and muḍu which are either pure Yerukala terminations or corruptions of Canarese endings.

Nominative ..	subba ..	śeḍi.
Accusative ..	subbani or subbana ..	śeḍini.
Instrumental ..		śeḍikeivi.
Conjunctive ..	subbamtoṭi ..	śeḍitoti.
Dative ..	subbamki ..	śeḍiki.
Ablative ..	subbanunci ..	śeḍinunci.
Genitive ..	subbamuḍu ..	śeḍimuḍu.
Locative ..	subbakōli .. subbamāṭi ..	śeḍikoli.
Vocative ..	subbā ..	śeḍī.

Adjective.

Adjectives generally appear to be formed by adding *a* and *i* either to the crude form or the crude form modified by doubling the final consonant or adding some inflexional increment as *ttu*, as

karu ..	karuttu.
velu ..	vella.

Table III.—*Table of Pronouns.*

English.	Yerukala.	Tamil.	English.	Yerukala.	Tamil.
I	nēnu	nān.	We	naṅgal	nam. nāngal.
My	naṅga	en.	Our	namber	nammuḍaya.
Mine	nambodudu	ennuḍayadu.	Ours	naṅgaldu nambardu	nammuḍayaḍu.
Me	nanna	ennai.	Us	naṅgalna	nammai. naṅgaḷai.
Thou	nīnu	nī.	You	ningal	niṅgaī.
Thy	niṅga	unnuḍaya.	Your	nimgal	vuṅgaḷuḍaya.
Thine	nimboḍudu	unnuḍayadu.	Yours	ningaldu	vuṅgaḷuḍayadu.
Thee	ninna	unnai.	You	ningalna	vuṅgaḷai.
He	ad	avan.	They	ayyalu	avar. avargal.
His	asaga	avanuḍaya.	Their	asaga	avaruḍaya.
His	attamoḍudu	avanuḍayadu	Theirs	asagaldu	avaruḍayadu.
Him	atta	avanai.	Them	asal asagalna	avarai.

The numerals are all modifications of Tamil, Telugu, and

Canarese words with the exception of vōgu (7) which seems to be a pure Yerukala word—

One ..	oṇḍu.	Eight ..	oṭṭu.
Two ..	reṇḍu.	Nine ..	ombadu.
Three ..	mūḍu.	Ten ..	pottu.
Four ..	nālugu.	Twenty ..	iruvadu.
Five ..	añju.	Thirty ..	muppadu.
Six ..	āru.	Forty ..	naluvadu.
Seven ..	ōgu.		

The Yerukala people in this part of the country do not seem to have words for numerals over forty.

The demonstrative pronouns are—

Singular.		*Plural.*	
ad.	.. naṅgalu	.. (pātikēṭikkiro).	
id.	.. niṅgalu	.. (pātikēṭikkiramga).	
ed.	.. ayyalu	.. (pātikēṭikkirum).	

Present.

I see a horse	.. ākudirinapātikēṭikkirē.
You see a horse	.. nīvukudirinapātikēṭikkira, adkudirinapātikēṭikkira.
Yesterday	.. nēcu.
The day before yesterday	.. mundunēcu.

Past.

1. nēkudirina ..	pāte	.. naṅgalu	.. pāto.
2. nīvu ..	pāta	.. niṅgalu	.. pātaṅga.
3. ad ..	pātca	.. ayyalu	.. pātcum.

Future.

1. nēkudirina ..	pākke	.. naṅgalu	.. pākko.
2. nīvu ..	pākka	.. niṅgalu	.. pākkaṅga.
3. ad ..	pākāku	.. ayyalu	.. pākākum.
to eat		.. vunu.	

Present.

1. nē sōru ..	uṇḍukēṭikkirē	.. naṅgalu	.. uṇḍukēṭikkiro.
2. nīvu ..	uṇḍukēṭikkira	.. niṅgalu	.. uṇḍukēṭikkiramga.
3. ad ..	uṇḍukēṭikkiru	.. ayyalu	.. uṇḍukēṭikkirum.

Past.

1. nē sōru ..	uṇḍe	.. naṅgalu	.. uṇḍo.
2. nīvu ..	uṇḍa	.. niṅgalu	.. uṇḍuṅga.
3. ad ..	uṇḍcu	.. ayyalu	.. uṇḍcum.

Future.

1. nē ..	uṅke	.. naṅgalu	.. uṅko.
2. nīvu ..	uṅka	.. niṅgalu	.. uṅkāṅga.
3. ad ..	uṅgāma	.. ayyalu	.. uṅgakum.

From the table we see the terminations forming the present, past, and future tenses are *ikkir* (*ta*, *ḍa*, or their modifications) and *ka*, and that these terminations are added to the crude form of the verbs or their modifications.

The particles denoting the 1st and 2nd person singular in all the tenses are *e* and *a*, and those denoting the 3rd person singular are *u* in the present, *cu* in the past, and *ak* in the future.

In the plural the particles are the same in all the tenses; they are *o* in the 1st, *aṅgalu* in the 2nd, and *um* in the 3rd persons.

Mood.

The infinitive is formed by adding *aṭam* and *aḍam* as cēyuṭam, pāgaḍam, umgaṭam, ōdatam.

Indicative		.. nēnu cētikēṭikkirē.
Imperative		.. cei, pāru, ōdu which are the simple forms of the verbs.
Potential ..	may	.. cēyavaccu.
	can	.. cēyagarrey.
	must	.. ceyyam.

the first being the Telugu termination, and the 2nd a corruption of the Telugu *gala*.

Subjunctive .. cēdikē, vamdikē, ē denoting if.

The following are the forms of the Yerukala verb corresponding to the avyayamulu in Telugu:—

cūci	.. pāti.
cūcucu	.. pātikēṭi.
teliyaka	.. aride pōgade pākade, kollade.*
cēyan (cēyuṭaku)	.. cēyarataku.
uṇḍan (uṇḍuṭaku)	.. aḍarataku.
pōvuḍun	.. pōnaperikili.

Phrases and sentences showing the use of participles, &c.

vaccucunnavāḍevaḍu	.. vārraduyēdu.
vaccinanāḍevaḍu	.. vandaduyēdu.
rāgalavāḍevaḍu	.. vārraduyēdu.
rānivāḍu	.. vārāradu.
endaru	.. ettanēru.
cēyarādu	.. cēyamāna.
kādu	.. alla.
lēdu	.. illa.
nēnu teccinacarra	.. nēnu yettinrakōlu.
atanivaddakupōyepilu pimcu	.. attamāṭakupōye ayipi.
atanitōmāṭlāḍinatarvātacepputānu	.. atatoṭivāśittanākaśonnakē.
bhōjanamucēsinatarvātapaṇḍukonināru.	sōruvuṇḍaperikinijarugucum gēti.

* These bear resemblance to Canarese words.

nēnu vastūvuṇḍagā atani jūcinānu	nēnu vandigēdi gēṇṇē attapātē vamd
vāruvaccinaṭṭytēpani istānu	ayyalu vārraṭṭānikēn pani koḍikke.
vāruvaccinappuḍu	ayyaluvandapuḍu.
eppuḍuvaccināvu	epuḍuvanda.
ekkaḍikipōināvu	emkupōna.
ikkaḍa	iṇgey ; īṭu.
bāgunnāvā	nellaikkirā.
come soon	bēgenā.
mundupuccukunnā aṭlāgēvunnadi	merudupōṭukimḍrikianage ikkir.
īpanicēyakapōtēkūli dorakadu	īpanicēya jōnikēnkūlidorakadalla.
ninnarātri caccipoināḍu	nēsunavārumaṭe sattocu.
ninnupiluvanampitē vastāvā rāvā	ninnu aipikkikēvārakāillyā.
nācētakādu	nākeilagadalla.
his good	adnella menasamgāikkir.
she is my mother	adnamgatāi.
he is coming with my mother	adnamgatāi amṭevamdīgē ṭikkir, nambaru tāivalla kēṭṭēn

one		nācēta	nākeili
nā	oṇḍu	nōtōṭi	naemṭi
nāku	naṅgā	nākoraku	nāgurimci
nāvalla	nāku		
īpamdunamdu rasamnāgurimci		īpagamukōle rasamilla	
peṭṭelō	ulēdu	two trees	remdumaram galu or ceḷḷu
nāvadda	peṭṭekōli		
nācamṭe	nāmāṭe	a tree	cedi or maram
	nācamṭe	branch	komma, kommalu
		leaf	ela ella

Adverbs.

Adverbs are generally formed by adding *gā* to adjectives and nouns. It is difficult to say whether this is purely a Yerukala termination or one borrowed from Telugu by the people living in the Telugu country as *nella, nellagā, karata, karatagā, mensam, meṅsaṅga.* The adverbs *keṭla, monne, atagam, pelikili* also bear resemblance to Tamil words.

V.

HISTORICAL TABLES CONCERNING THE PRESIDENCY OF FORT ST. GEORGE.

I.—ACQUISITIONS OF TERRITORY BY THE BRITISH IN THE PRESIDENCY OF FORT ST. GEORGE.

No. I.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
1616 ..	Calicut, Factory of.	Now merged in the town of Calicut, the capital of the district of Malabar. (1.) Factory established by permission of the Zamorin or Raja of Calicut, the ancestor of the present Zamorin (Thornton's Gazetteer).	Factory only.	*Nil.*
1664-65.	..	(2.) Establishment expelled by the Dutch (Bruce ii, 158).		
1668-69.	..	(3.) Agency re-established (Bruce ii, 224).		
1702 ..	..	(4.) 2nd July.—Factory entered in the "Quinque-partite Indenture of Conveyance of the Dead Stock of the two East India Companies."		
1766 ..	..	(5.) Grant of factory and all existing privileges confirmed and ratified by Hyder Ali on his conquest of Malabar, 23rd February (Aitchison, vol. v, p. 127).		
1770 ..	..	(6.) Further ratification by Hyder Ali. Treaty 8th August (Aitchison v, 133).		
1779 ..	..	(7.) English dispossessed by Hyder Ali.		
1782 ..	..	(8.) Reduced by Major Abingdon (Malabar Commission Report, para. 38).		
1784 ..	..	(9.) Treaty dated 11th March. Factory and privileges restored by Tippoo Sultan, Article 9 (Aitchison v, 144).		
1792 ..	..	(10.) Ceded with the rest of Malabar to the Company by Tippoo (Aitchison v, 149). Treaty dated 18th March.		

No. II.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
1621-22.	Pulicat ..	A seaport in the district of Chingleput, 23 miles north of Madras. (1.) Factory established by permission of the Dutch under the operation of the treaty concluded between King James I and the States General, dated 7th July 1619 (Bruce i, 231).	Factory only.	*Nil.*
1622-23.	..	(2.) Factory withdrawn in consequence of the oppressions of the Dutch (Bruce i, 239).		
1781 ..	..	(3.) Fort, Factory, and Dependencies, viz., the island of Irakam[1] and the villages of Vanjivākam, Avarivākam, and Kanavandurai (land revenue, 1,475 pagodas) taken from the Dutch by Lord Macartney, Governor of Madras, 2nd July (Local Records).	SQ. MILES. 1,647	RS. 7,338
1785 ..	..	(4.) July.—Restored to Holland under treaty with the States General of 20th May 1784 (Local Records).		
1795 ..	..	(5.) Surrendered to Lord Hobart, the Governor's summons. Capitulation dated 16th July (Local Records).		
1818 ..	..	(6.) 31st March.—Restored to Holland agreeably to the Convention of the Allied Powers in 1814 (Local Records).		
1825 ..	..	(7.) 1st June.—Restored to Great Britain under the treaty of March 1824 (Local Records).		

No. III.

1621-22.	Pettipolee ..	Now Nizampatam, a seaport in the district of Kistna. (1.) Factory established (Bruce i, 232). *N.B.*—This is the first place at which the English commenced to trade on the Eastern Coast of the continent of India. They landed at Pettipolee, August 20th, 1611; sent goods on shore and left two of the supercargoes, picking them up again on the ship's return from Masulipatam, and proceeding across the Bay to Bantam (Narrative of seventh voyage, London East India Company; Captain Antony Hippon in ship *Globe*).	Factory only.	*Nil.*

[1] The island of Irakam is now attached to the Nellore District.

No. III—(*Continued*).

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
1653-54.	Pettipolee, (*Continued*).	(2.) Dissolved (Bruce i, 484).		
1682 ..	..	(3.) Noted as existing, 21st July (Local Records).		
1686 ..	..	(4.) Dissolved again (Bruce ii, 572).		
1697 ..	..	(5.) Re-settled (Bruce ii, 206).		
1702 ..	..	(6.) 2nd July.—The factory is entered in the " Quinque-partite Indenture of Conveyance of the Dead Stock of the two East India Companies," but it was probably soon after dissolved, as there is no further mention of it in the Local Records.		
1753 ..	..	(7.) November.—Ceded to the French by the Nizam, as part of the Northern Circars.		
1759 ..	..	(8.) 14th May.—As part of the Nizampatam Circar bestowed on the English by Salábat Jang, Nizam (Aitchison, vol. v, Treaties). (*Vide* Acq. No. XXXI).		
1765 ..	..	(9.) August 12th.—Grant confirmed by the Mogul's farmán.		

No. IV.

1621-22.	Masulipatam, Factory of.	The chief town and port of the Kistna District. (1.) Factory established (Bruce i, 239). *Note.*—The first English vessel that traded at Masulipatam *alias* Metclepatnam arrived there 31st August 1611 (*vide* Note (1) under Pettipolee).	Factory only.	*Nil.*
1628 ..	..	(2.) Removal to Armagon owing to exactions of local Governor, one factor being left behind to collect debts, 27th September (Bruce i, 291).		
1632 ..	..	(3.) November.—Factory re-established under the " Golden Phurmaund" of the King of Golconda.		
1689 ..	..	(4.) Factory seized by the local Governor owing to the rupture between Aurangzeb and the Company (Bruce ii, 650).		
1690 ..	..	(5.) Cowle for the factory renewed.—Farmán dated 28th December from Zulfakar Khán, the Mogul General (Local Records).		

No. IV—(*Continued*).

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
1702 ..	Masulipatam—(*Continued*).	(6.) The factory of Macilipatnam is entered in the "Quinque-partite Indenture of Conveyance of the Dead Stock of the two East India Companies," dated 2nd July.		
1750 ..	..	(7.) Captured by the French under orders of Dupleix, who sent up a force by sea from Pondicherry, month of July (Orme, Book II).		
1753 ..	..	(8.) November—Formally ceded to France by the Nizam with the rest of the Circars (Orme, Book II).		
1759 ..	..	(9.) Retaken from the French by Colonel Forde, 7th April (Orme, Book II).		
1759 ..	..	(10.) 14th May.—Bestowed on the English Company as an inâm or free gift, together with the whole of the Circar of Masulipatam and other territory by the Nizam Salábat Jang (Aitchison's Treaties, vol. v). (*Vide* Acq. No. XXXI).		
1765 ..	..	(11.) August 12th.—Grant confirmed by the Mogul's farmân.		

No. V.

1625-26.	Armagon, Factory of.	A port in the district of Nellore, 66 miles north of Madras. (1.) February (Bruce i, 269).—The ground for the factory was obtained from the local Karnam or Kánúngo, Patnaswámula Arumukham Mudali, and named after him (Nellore Manual, pp. 440-41).	Fortified Factory only.	*Nil.*
1641 ..	..	(2.) 24th September.—Establishment removed to the new station, Madras, and the place abandoned altogether (Wilks i, 163).		
1801 ..	..	(3.) 31st July—Ceded with the rest of the Carnatic to the East India Company by His Highness Prince Azím-ul-Daula, Nawáb Subahdar of Arcot (Aitchison's Treaties, vol. v). (*Vide* Acq. No. XLIII).		

No. VI.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
	Viravesaram.	A small town 8 miles north-west of Narsapúr Port, Godávari District.	Factory only.	*Nil.*
1634-35.	..	(*a.*) Factory established (Bruce i, 326).		
1662-63.	..	(*b.*) Withdrawn (Bruce ii, 150).		
1677-78.	..	(*c.*) Re-established (Bruce ii, 409).		
1702 ..	..	(*d*) No longer existing. Not in list of Dead Stock taken this year.		
1768 ..	..	(*e.*) Ceded with Circars (*vide* Acq. No. XXXIV).		

No. VII.

1639 ..	Madraspatam, Original Settlement of.	(1.) 1st March.—Grant for a station and for the erection of a fort by Srí Ranga Ráyulu (descendant of the Vijayanagar Kings) reigning at Chandragiri, about ninety miles north-west of Madras; obtained for the Company by the local Governor or Naick, Dámarla Venkatádri (ancestor of the present Raja of Kálahasti, C.S.I.) who desired that the station (which was selected "as better calculated for the protection of trade than Armagon") might be styled Chennappa-patnam, after his father Kari Chennappa, which was done; although the Royal grant enjoins the use of the name "Srí Ránga Raya patnam." Mr. Francis Day, one of the Council at Masulipatam, and the head of the factory at Armagon, was the officer who negotiated the affair. The grant covered a space roughly estimated as five miles in length by one mile in breadth (Bruce i, 368, Wilks i, 163, Mill iii, 52).	SQ. MILES. 6·74	RS. 19,879.
1645-46.	..	(2.) The Hindu State of Chandragiri being subverted about this time (Wilks i, 163) by the Mussulman King of Golconda, the Agent and Council at Fort St. George send a deputation, with a present to Golconda, to obtain a confirmation of their privileges (Bruce i, 415). The same authority (i, 455) under the year 1650-51 speaks of the grant having been obtained; but the formal document was not delivered till 1683 (*vide* (4) *infra*).		

No. VII—(*Continued*).

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
1671-72.	Madraspatam—(*Continued*).	(3.) Local Records, dated 11th April.—It is agreed to pay the King of Golconda 1,200 pagodas (4,800 rupees) per annum, as rent for the settlement which is to be free from any other imposition for ever; and to pay 11,000 pagodas in full of all demands for the time past.		
1683 ..	..	(4.) Local Records, 12th November.—The Golconda farmán formally delivered to Mr. William Gyfford, Governor. *Note.*—Golconda fell under the arms of Aurangzeb in 1687, and the rent then became an asset of the Mogul Empire.		
1702 ..	..	(5.) 2nd July.—Described in the list of the Dead Stock of the two East India Companies, as "Fort St. George, with the castle and fortifications, and territory thereto belonging: upon which a large city is built, consisting of—houses, which are held of and pay rent to the said Governor and Company, together with the said city and its dependencies."		
1746 ..	..	(6.) September 10th.—Surrendered to the French arms under Labourdonnais. Ransom fixed by him at 11 lakhs of pagodas (44 lakhs of rupees or 440,000 pounds sterling); but the stipulation disregarded by Dupleix (Orme).		
1749 ..	..	(7.) August 15th.—Delivered up by the French under the operation of the treaty of Aix la Chapelle, dated October 7th, 1748 (Orme).		
1752 ..	..	(8.) Local Records, 31st August.—Mahomed Ali (Wallajah), Nawáb of Arcot, remits by farmán the 1,200 pagodas (4,800 rupees) per annum, the rent heretofore paid for the settlement (*vide* Note (3) *supra*).		
1765 ..	..	(9.) August 12th.—Possession confirmed by a farmán from the Mogul by way of inám or free gift.		

No. VIII.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
	Madakara ..	Island on the north side of the Billiapatam river, north of Cannanore ; is now a part of the Cherakal Taluk.	ACRES. S. GR. 1	RS. 1,120
1669-70.	..	(1.) Obtained from the Raja, *i.e.*, of Cherakal, probably as a trading post on rent.		
1736 ..	..	(2.) March.—Permission granted by the Raja for the erection of a fort.		
1749 ..	..	(3.) May.—The island formally ceded by the Raja as a British possession (Malabar Commission Report, para. 9).		
1762 ..	..	(4.) August.—Fort blown up and island given back to the Vice-Regent of Cherakal.[2]		
1792 ..	..	(5.) 18th March.—Ceded by Tippoo with the rest of Malabar and other territory (*vide* Acq. No. XXXVIII).		

No. IX.

	Madapollam, Factory of.	Makes one village with Narsapûr of the Godávari District, 45 miles north of Masulipatam, 6 miles from mouth of the Vasishta branch of the Godávari, and on its right bank.	Factory only.	*Nil.*
1679 ..	..	(1.) December. — Factory established (Bruce ii, 439).		
1688 ..	..	(2.) August.—Withdrawn (Bruce ii, 654).		
1698 ..	..	(3.) Resettled under orders of Court of Directors.		
1702 ..	..	(4.) Entered in the Dead Stock of the two uniting Companies.		
1757 ..	..	(5.) Captured by the French under Bussy.		
1759 ..	..	(6.) 14th May.—Part of the territory ceded by Nizam's Treaty with Colonel Forde (*vide* Acq. No. XXXI).		
1765 ..	..	(7.) August 12th.—Grant confirmed by the Mogul's farmân.		

[2] After the fall of Pondicherry and Mahé in 1761, this post which had up to that time been useful in protecting the English Company's trade, and in retarding that of the French Company, was abandoned as no longer of use.

No. X.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
			SQ. MILES.	RS.
	Porto-Novo *alias* Farangipet.	A seaport in the district of South Arcot...	0·78	36
1681-82.	..	(1.) Local Records, dated 12th January.—Cowle for making a settlement obtained from Harají Raja, the Subahdar of Gingee, and the Deputy in the Carnatic of Sambají, who had recently succeeded his father, Sivají, as head of the Mahratta dynasty.		
1702 ..	..	(2.) July 2nd.—Factory entered in the "Quinque-partite Indenture of the Conveyance of the Dead Stock of the two East India Companies."		
1758 ..	..	(3.) Fell into the hands of the French under Lally, with Fort St. David and Cuddalore.		
1760 ..	..	(4.) French driven out by Colonel Coote after his defeat of Lally at Wandiwash.		
1782 ..	..	(5.) Taken by the French under Bussy (Wilks).		
1785 ..	..	(6.) 1st February.—Restored to England under treaty of Versailles, dated 3rd September 1783.		

No. XI.

1682 ..	Cuddalore, Factory of.	A seaport in South Arcot, and the chief town of that district.	1	3,643
		(1.) Factory established (Local Records, 11th May 1682).		
1683 ..	..	(2.) Business commenced (Local Records, 19th March 1683).		
1692 ..	..	(3.) Ordered by the Court of Directors to be withdrawn, along with Conimere (q. v.)[3] in consequence of the grant of Tegnapatam (q. v.)[4] by Rám Raja (Bruce iii, 111).		
1702 ..	..	(4.) July 2nd.—Mentioned as existing in the "Quinque-partite Indenture of Conveyance of the Dead Stock of the two East India Companies."		

[3] *Vide* Acq. No. XIV.

[4] *Vide* Acq. No. XV.

No. XI—(*Continued*).

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
1758 ..	Cuddalore—(*Continued*).	(5.) Surrendered to Lally, 4th May (Orme).		
1760 ..	..	(6.) April.—Retaken by detachment under Assaf Beg, sent by Coote after his victory at Wandiwash (Orme).		
1782 ..	..	(7.) April 8th.—Capitulated to the French, assisted by the Mysoreans (Wilks).		
1785 ..	..	(8.) 1st February.—Restored to England by France under the treaty of Versailles, dated 3rd September 1783.		

No. XII.

1683 ..	Vizagapatam, Fortified Factory of.	A seaport, capital of district of that name. (1.) Supposed date of establishing settlement (being the first mention of it). The date is not given by Bruce, nor in the Local Records which go back to 1670 only. If the date is correct, the grant must have issued from the King of Golconda or his local officers.	Fortified Factory only.	*Nil.*
1689 ..	..	(2.) September 13th.—Factory seized and the English officers put to the sword by the Mogul's orders, owing to the rupture between Aurangzeb and the Company in that year.		
1690 ..	..	(3.) 28th December.—Kaul for the factory renewed by Zulfakar Khán, the Mogul General in the Deccan.		
1692 ..	..	(4.) April.—Factory allowed to be fortified by the same authority.		
1702 ..	..	(5.) Entered in the Dead Stock account taken on the union of the two East India Companies. It is there described as "the Fort and Factory at Vizagapatam."		
1716 ..	..	(6.) Farmán from the Emperor Faroksir confirming the possession of the settlement (Local Records).		
1757 ..	..	(7.) 25th June.—Captured by the French under Bussy (Orme).		
1758 ..	..	(8.) 12th September.—Presented to the English by the Raja of Vizianagram after capturing it from the French garrison (Orme).		
1765 ..	..	(9.) August 12th.—Grant confirmed by the Mogul's farmán.		

No. XIII.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
	Tellicherry ..	Town and seaport in Malabar	Fortified Factory only.	*Nil.*
1683 84.		(1.) Factory established under a Chief and Factors by the President of Surat (Bruce ii, 511) ; being the first Pepper settlement on the Malabar Coast.		
1688-89.	..	(2.) Factory strengthened (Bruce ii, 616).		
1702 ..	..	(3.) Entered in the Dead Stock list of two East India Companies as the "Fort of Tellicherry."		
1708 ..	..	(4.) Formal grant obtained for the Fort from the Cherakal Raja (Malabar Commission Report, para. 9).		
1719 ..	..	(5.) Limits of settlement extended on south side after a successful war with the Coringotte Nair (idem).	SQ. MILES. 1½	RS. 1,490
1776 ..	..	(6.) The settlement reduced from a Chiefship to a Residency.		
1780 ..	..	(7.) Besieged by Sirdar Khán, Hyder's Faujdar, with the Cherakal Raja.		
1782 ..	..	(8.) Successful sortie under Major Abingdon, and the siege raised (Malabar Commission Report, para. 30).		
1784 ..	..	(9.) The Chiefship re-established.		
1794 ..	..	(10.) Chiefship abolished, and the settlement placed directly under the Supervisor of Malabar.		

No. XIV.

1683 ..	Conimere *alias* Kunimédu.	On the coast, South Arcot District, 10 miles north of Pondicherry.	Factory only.	*Nil.*
		(1.) Factory established (Bruce ii, 519).		
1688 ..	..	(2.) Farmán for a fortified settlement and liberty of trade, obtained on a present of 800 pagodas or Rupees 3,200, from Rám Raja, who, on the assassination of his elder brother Sambají (Sivaji's successor) by Aurangzeb, and the simultaneous captivity of Sahojī, Sambajī's son, had been recognised as head of the Mahratta dynasty by its subjects (Bruce ii, 652).		
1691 ..	..	(3.) Withdrawn by order of the Court of Directors, on the purchase of Tegnapatam (Fort St. David), (Bruce iii, 111). (*Vide* Acq. No. XV).		

No. XIV—(*Continued*).

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
1801 ..	Conimere—(*Continued*).	(4.) Ceded with the rest of the Subah of Arcot to the Company by treaty with Azim-úl-Daula, Nawáb Subahdar of the Carnatic, 31st July (Aitchison, vol. v, 248). *Vide* Acq. No. XLIII).		

No. XV.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
1690 ..	Tegnapatam ..	(*alias* Fort St. David), sometimes written Thevanapatnam, Devenapatnam, Devanámpatnam, Devipatnam, now included in Cuddalore, the chief town of the South Arcot District. (1.) September 1st.—The grant of land for this settlement was purchased for 120,000 chakrams = 8,000 pagodas = 32,000 rupees from Rám Raja, who, on the assassination of his elder brother Sambají (Sivaji's successor) by Aurangzeb, and the simultaneous captivity of Sahojí, Sambají's son, had been recognised as the head of the Mahratta dynasty by its subjects (Local Records).	SQ. MILES. 10	RS. 11,130
1702 ..	..	(2.) July 2nd.—Mentioned in the "Quinque-partite Indenture of Conveyance of the Dead Stock of the two East India Companies" as "all that fort called Fort St. David (being a strong fort and factory) and about three miles compass of the circumjacent country, upon which several small towns or villages are erected."		
1758 ..	..	(3.) June 2nd.—Surrendered to the French under Lally, who at once razed all the fortifications to the ground (Orme). It was afterwards included in Cuddalore (q.v.)[5] and its dependencies, instead of being shown under a separate head.		

No. XVI.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
1693 ..	The villages of Tondiyárpet, Purasavákam and Egmore.	Parwána from Asad Khán, Aurangzeb's Grand Vizier, granting the English the three towns, now included in the city of Madras, of Tondiyárpet, Purasavákam, and Egmore properly Elambúr, 10th February (Local Records).	8·8	20,861

[5] *Vide* Acq. No. xi.

No. XVI—(*Continued*).

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
			SQ. MILES.	RS.
1746 ..	The villages of Tondiyarpet, Purasavakam, and Egmore—(*Continued*).	(2.) September 10th.—Surrendered, as part of the city of Madras, to the French arms under Labourdonnais. Ransom fixed by him at 11 lakhs of pagodas (44 lakhs of rupees or 440,000 pounds sterling); but the stipulation disregarded by Dupleix (Orme).	8·8	20,861
1749 ..	..	(3.) August 15th.—Delivered up, as part of the city of Madras, by the French under the operation of the treaty of Aix la Chapelle, dated October 7th, 1748 (Orme).		
1765 ..	..	(4.) August 12th.—Original grant confirmed by a farmân from the Mogul.		

No. XVII.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
	Anjengo ..	A small seaport on the Travancore Coast 78 miles N.N.W. of Cape Comorin; now attached to the Malabar Collectorate.	⅓	891
1694-95.	..	(1.) Settlement formed by grant of the Queen of Attinga, a Princess under the sovereignty of Travancore (Bruce III, 165) on payment of ground-rent.		
1695-96.	..	(2.) Fort built (Bruce III, 195).		
1702 ..	..	(3.) Fort entered in the "Quinque-partite Indenture of Conveyance of the Dead Stock of the two East India Companies," dated 2nd July.		

No. XVIII.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
1708 ..	The villages of Vyásarpâdi and Nungambâkam.	(1.) September 25th.—Parwána from Dawúd Khân, Nawáb or Faujdar of the Carnatic portion of the Golconda Subah, granting to the English the towns of Vyásarpâdi and Nungambâkam, now included in the city of Madras (Local Records).	3·2	5,868

No. XVIII—(*Continued*).

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
			SQ. MILES.	RS.
1713 ..	The villages of Vyásarpádi and Nungambákam —(*Continued*).	(2.) October.—The towns mentioned under (1) resumed by Nawáb Sádat ulla Khán (Local Records).	3·2	5,868
1716 ..	..	(3.) January 5th.—Farmán from the Emperor Faroksir, reciting the usurpation mentioned under (2) and cancelling it with confirmation of the grant (Local Records).		
1746 ..	..	(4.) September 10th.—Surrendered, as part of the city of Madras, to the French arms under Labourdonnais.		
1749 ..	..	(5.) August 15th.—Delivered up, as part of the city of Madras, by the French under the operation of the treaty of Aix la Chapelle, dated 7th October 1748 (Orme).		
1765 ..	..	(6.) Old grants confirmed by farmán of the Mogul.		

No. XIX.

	Tiruvattúr, Sattangádu, and Kattiwákam.	The last name is called by the English "Ennore." These three villages lie to the north of the city of Madras, in the Saidapet Taluk of the Chingleput District.	6½	2,444
1708 ..	..	(1.) September 25th.—Parwána from Dawúd Khán, Nawáb and Faujdar of the Carnatic portion of the Golconda Subah (Local Records).		
1713 ..	..	(2.) Resumed by Náwáb Sádat ulla Khán (Local Records).		
1716 ..	..	(3.) January 5th.—Farmán from the Emperor Faroksir, reciting the usurpation just mentioned, and cancelling it, with confirmation of grant.		
1765 ..	..	(4.) August 12th.—Confirmed again by the general farmán of the Mogul.		

No. XX.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
	Island of Chetwai.	A strip of land on the sea coast of the Malabar District insulated by the estuaries of Chetwai and Kodangalur (Cranganore), 50 miles north of Cochin. It is now part of the Ponani Taluk.	SQ. MILES. 40	RS. 38,826
1715 ..	..	Permission granted by the Zamorin to the English to build a warehouse here.		
1717 ..	..	Seized from the Zamorin by the Dutch who built a fort here (Malabar Commissioners' Report, paragraph 24).		
1776 ..	..	Conquered by Hyder Ali from the Dutch (*ibid*).		
1790 ..	..	Taken by Lieutenant-Colonel Hartley and leased to the Cochin Raja for Rupees 40,000 per annum. The lease is dated 26th November 1790. It was renewed in 1791 for two years, and in 1794 for ten years (Malabar Commission Report, paragraphs 164 and 520).		

No. XXI.

	Ingeram, Factory of.	On the Godávari, 6 miles south of Coringa.	Factory only.	*Nil.*
1722 ..	..	(1.) June.—Factory established.		
1757 ..	..	(2.) Captured by the French under Bussy.		
1759 ..	..	(3.) 10th May.—Part of the territory ceded by Nizam's treaty with Colonel Forde (*vide* Acq. No. XXXI).		
1765 ..	..	(4.) August 12th.—Grant confirmed by the Mogul's farmán.		

No. XXII.

	Island of Dharmapatam.	Immediately to the north of the Tellicherry Factory. The Anjarakandy river splits into two branches as it approaches the sea and the land lying between them and the sea is the island in question: now in the Kottayam Taluk of the Malabar Collectorate.	SQ. MILES. 6	RS. 4,132

No. XXII—(*Continued*).

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
			SQ. MILES.	RS.
1734-35.	Island of Dharmapatam—(*Continued*).	(1.) Ceded to English by the Cherakal, Cotiote and Cannanore Rajas (Malabar Commission Report, para. 9, and Local Records).	6	4,132
1788 ..	..	(2.) June.—Seized by Ravi Varma, Raja of Cherakal (Malabar Commission Report, paragraph 55).		
1789 ..	..	(3.) January 3rd.—Retaken by the English (Malabar Commission Report, paragraph 65).		

No. XXIII.

			SQ. MILES.	RS.
1742 ..	The Villages of Vepery, Perambúr and Pudupákam.	(1.) 4th November.—Sanad from Nawáb Sádat ulla Khán, Subah of Arcot, granting by way of inám to the Company the three villages of Vepery, Perambúr and Pudupákam, now included in the city of Madras (Local Records).	3·9	7,685
1746 ..	..	(2.) September 10th.—Surrendered, as part of the city of Madras, to the French arms under Labourdonnais.		
1749 ..	..	(3.) August 15th.—Delivered up, as part of the city of Madras, by the French under the operation of the treaty Aix la Chapelle, dated October 7th, 1748 (Orme).		
1765 ..	..	(4.) August 12th.—Original grant confirmed by farmán of the Mogul.		

No. XXIV.

			SQ. MILES.	RS.
1742 ..	Eranávur[6] and Shadayankupam.	Two villages to the south of Madras in the Saidapet Taluk of Chingleput District. November 4th.—Grant from Nawáb Sádat ulla Khán, Subah of Arcot.	$4\frac{1}{2}$	469
1765 ..	..	(2.) August 12th.—Confirmed by the Mogul's farmán.		

[6] Eranávur is held at a pepper-corn rent, on *Srotriyam* tenure.

No. XXV.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
			SQ. MILES.	RS.
1749 ..	The Town of St. Thomé.	(1.) 2nd October.—Farmán from Mahomed Ali (afterwards Wallajah), Nawáb of the Carnatic, granting to the English the town of Mayilápur or St. Thomé, now included in the city of Madras (Local Records); but it appears from Orme that the English immediately after the restoration (15th August 1749) of Madras by the French, under the treaty of Aix la Chapelle, took possession of St. Thomé, for fear of its falling into the hands of the French.	4·9	13,502
1765 ..	..	(2.) August 12th.—Grant confirmed by the Mogul's farmán.		

No. XXVI.

			SQ. MILES.	RS.
1749 ..	Devikóta ..	A town in the Tanjore District, near the junction of the Coleroon with the sea, 37 miles south of Pondicherry.		
		(1.) Town and fort captured by Major Lawrence in a war between the English and Pratáp Singh, Raja of Tanjore; commenced by the former with a view to the restoration of Sahoji to the throne of that kingdom; but continued after it became known that Sahoji was unacceptable to the Tanjorines—on their own account, with a view "of making some acquisitions to compensate the expenses which had already been incurred" (Orme).	16	28,905
1751 ..	..	(2.) January 1st.—Ceded, with 31 surrounding villages, to the English by Raja Pratáp Singh, on condition of his receiving Military aid whenever required: land revenue 9,000 pagodas (Local Records).		
1758 ..	..	(3.) June 4th.—Fortress abandoned by the English garrison on the fall of Fort St. David to Lally and the approach of a large French force (Orme).		
1760 ..	..	(4.) February.—Evacuated by the French; after Coote's victory at Wandewash, and regarrisoned by the English (Orme).		

No. XXVII.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
			SQ. MILES.	RS.
1750 ..	Trevendapur.	In the district of South Arcot, 28 villages, rated at 26,250 chakrams. February.—Granted by the Nawáb of Arcot to the Company in Jágír (Local Records).	55	58,050
1765 ..	..	August 12th.—Farmán from the Mogul confirming the above grant by way of inám or free gift.		

No. XXVIII.

			SQ. MILES.	RS.
1750 ..	Poonamallee District.	Consisting of 231 villages, in the district of Chingleput. 26th September.—Granted in Jágír to the Company by Mahomed Ali (afterwards Wallajah), Nawáb of Arcot, who then styled himself by his deceased father's name, Anwar-úd-dín Khân. Revenue (with customs) 34,840 pagodas (Local Records).	330	2¼ lakhs.
1765 ..	..	(2.) August 12th.—Confirmed by way of inám or free gift by a Sanad from the Mogul.		

No. XXIX.

	Bandermalanka and Nilapalli, Factories of	A seaport, Godávari District, west of Narsapúr near Ingeram (*vide* Acq. No. XXI).	Factories only.	*Nil.*
1751 ..	..	(1.) November.—Both factories established.		
1757 ..	..	(2.) Both taken by Bussy.		
1759 ..	..	(3.) 14th May.—Part of the territory ceded by Nizam's treaty with Colonel Forde (*vide* Acq. No. XXXI).		
1765 ..	..	(4.) August 12th.—Grant confirmed by the Mogul's farmán.		

No. XXX.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
			SQ. MILES.	RS.
	Mount Dilly, Fort of.	Is a detached hill, 855 feet in height, on the Malabar Coast forming a prominent land mark in the charts ; forms part of Cherakal Taluk.	A few acres.	
		A fort was first built here on a bluff projecting into the sea by the Portuguese, from whom the Dutch took it.		
1754 ..	..	February 24th.—The French acquired it by purchase from the Cherakal Raja.		
1761 ..	..	The small French garrison massacred by Ali Raja of Cannanore who was obliged to deliver it up to the English as per terms of the capitulation of Mahé, dated 10th February 1761.		
1779 ..	..	Taken by Sirdar Khán, Tippoo's General.		
1784 ..	..	Restored to the English by the treaty of Mangalore, dated 11th March 1784.		

No. XXXI.

			SQ. MILES.	RS.
1759 ..	Districts ceded by the Nizam. The Circar of Masulipatam, with eight districts, the Circar of Nizampatam, and the districts of Kondavíd and Akulamannád.	(1.) 14th May.—Given to the English Company "as an inâm or free gift" by the Nizam, Salábat Jang, in treaty with Colonel Forde. The small Circar of Masulipatam is not to be confounded, as it often is, with the extensive district afterwards so called. The whole territory ceded by the foregoing treaty is about 700 square miles only in extent, and with the exception of the towns mentioned under head (VI) *infra*—which now belong to the Godávari District—is a portion of the present Kistna Collectorate, viz. :—	700	3,50,000
		(I.) The Circar of Bunder, or seaports of Masulipatam, divided into eight districts		

No. XXXI—(*Continued*).

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
	Districts ceded by the Nizam —(*Continued*).	or Mehals, forming a semi-circle from 2 to 20 coss round the fort:— 1. The Havéli, or home grounds and gardens of 12 pettahs or suburbs with their six circumjacent pálems or petty zemindaries, and the salt pans. 2. Divi, with six lesser islands. 3. Málúr. 4. Inugudúru. 5. Pedana. 6. Tummidi. 7. Bondára. 8. Narsapur. (II.) The Circar of Nizampatam subdivided into 36 Mehals lying south of the Kistna, on the coast, about 20 coss from Masulipatam. It extended 60 miles south from Point Divi and averaged 5 miles in breadth. (III.) Kondavìd (*alias* Guntúr) a large pargana (not to be confounded with the large district of same name), two coss west of Masulipatam, containing fifty-two villages. (IV.) Akulamannád of fifty-two villages. (V.) Tundúru. (VI.) The towns and dependencies of Nìlapalli, Bendamurlanka, Sakhinétepalli, Ramesvaram, Gonganapalli, Antarvedhi, on the coast, on different branches of the Godávari river.	SQ. MILES. 700	RS. 3,50,000
1765 ..	..	(2.) August 12th.—Grant confirmed by the Mogul's farmán.		

No. XXXII.

1763 ..	Chingleput District, greater portion of.	(1.) October 16th.—On this date the Nawáb of the Carnatic by 17 Sanads "in consideration of the great services rendered to his affairs by the Company, their firm friendship for him, and his dependence on their future alliance" gives and makes over to them in Jágir,	SQ. MILES. 2,284	RS. 15¾ lakhs.

No. XXXII—(*Continued*).

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
	Chingleput District—(*Continued*).	exclusive of subsidiary Srotriyams and Ináms, and exclusive also of the forts of Chingleput, Tripassore, Carangoly, Alamparva, and of the mints at Alamparva and Covelong; 1,759 villages belonging to 17 parganas which are now included in the Madras District of Chingleput.	SQ. MILES. 2,284	RS. 15¾ lakhs.
		(2.) October 29th.—Reciting similar grounds, gives a similar Sanad for 175 villages which in the Sanads of 16th idem were not reckoned as belonging to the parganas granted, but which his Sarishtadar has reminded him appertain to the same.		
1765 ..	..	(3.) August 12th.—Farmán from the Mogul confirming these grants by way of inám or free gift.		
1801 ..	..	(4.) 31st July.—The items reserved in the grant of 16th October 1763 were ceded with the rest of the Subah of Arcot to the Company by treaty with Azím-úl Daula, Nawáb Subahdar of the Carnatic (*vide* Acq. No. XLIII).		

No. XXXIII.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
	Randatarra ..	Formerly was a small taluk in North Malabar lying between Cannanore and Dharmapatam Island; it is now comprised in the Cherakal Taluk of the Malabar Collectorate.	SQ. MILES 24	RS. 20,515
1741 ..	..	(1.) Mortgaged by the Achimars or Chiefs to the Company for 60,000 silver fanams, equal to 12,000 rupees.		
1749 ..	..	(2.) The debt increased to 80,000 fanams.		
1765 ..	..	(3.) 23rd March.—Ceded to the Chief of Tellicherry by Ravi Varma, Regent of the Cherakal Ráj (Malabar Commission Report, paragraph 26).		
1779 ..	..	(4.) Reduced by the Rajas of Cherakal and Cartinád under the requisition of Hyder Ali (Municipal Commission Report, paragraph 30).		

No. XXXIII—(*Continued*).

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
			SQ. MILES.	RS.
1782 ..	..	(5.) Reoccupied by the Chief of Tellicherry (paragraph 44).		
1786 ..	..	(6.) Seized again by the Raja of Cherakal (paragraphs 45 and 46).		
1792 ..	..	(7.) Fell to the Company with rest of Malabar under the Treaty, dated 18th March 1792, with Tippoo,[7] and placed by the Bombay Commissioners under the direct collection of the Company's Government (Malabar Commission Report, paragraph 85).		

No. XXXIV.

			SQ. MILES.	RS.
1768 ..	The Circars of Chicacole, Rajahmundry, Ellore, Mustafanagar, and Murtizanagar.	26th February.—On this date there were ceded by the Nizam in treaty with the Government of Fort St. George, subject to an annual payment (since commuted) of 7 lakhs of rupees, the Circars of (1) Murtizanagar *alias* Guntúr *alias* Kondavídu; (2) Mustafanagar *alias* Kondapilli; (3) Ellore; (4) Rajahmundry; (5) Chicacole *alias* Kalinga. This cession, *together with the cession of* 14*th May* 1759 (*vide* Acquisition No. XXXI) and the taluks of Bhadráchalam and Rákapalli (*vide* Acquisition No. XLVIII) comprises the whole of what is now known as the "Northern Circars" or the four extensive Madras Districts of Ganjam, Vizagapatam, Godávari, and Kistna: the two last mentioned having been formed out of the three old districts styled Rajahmundry, Guntúr, and Masulipatam in 1859. NOTE.—The above date, 26th February 1768, is generally reckoned as that of the actual cession of these territories, and was so recognised by law—*vide* Section II (late) Madras Regulation XXXI, 1802: and rightly so, because the Sanad of the Mogul Emperor, dated 12th August 1765, assigning this territory to his Sepoy Sirdars, the	40,217	106,00,000

[7] *Vide* Acq. No. XXXVIII.

No. XXXIV—(*Continued*).

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
	The Circars of Chicacole, Rajahmundry, Ellore, Mustafanagar, and Murtizanagar —(*Continued*).	English Company, by way of inám or free gift; and the treaty with the Nizam of 12th November 1766, by which he ceded the same provinces, had no substantial operation. In regard to the Circar of Murtizanagar, the Government of Fort St. George agreed, out of friendship for the Nizam, to permit his brother, Bazalut Jang, to enjoy it as a Jágír for life. The tenant died on the 5th October 1782; and, some difficulties delaying prompter action on the part of the Company, the Nizam's Amildars retained the country till a formal Sanad for its being delivered up was procured by Lord Cornwallis on the 18th September 1788.	SQ. MILES. 40,217	RS. 106,00,000

No. XXXV.

1778 ..	Nagore ..	A seaport in the district of Tanjore, 14 miles south of Tranquebar, and a few miles north of Negapatam, with the small island belonging to it and eight magans comprising 277 villages. June 17th.—Granted to the Company by the Raja of Tanjore in consideration of services rendered (*i.e.*, his restoration to his throne from which he had been expelled by the Nawáb of Arcot) and in hope of future protection. (Aitchison V, page 268).	112	2,19,077

No. XXXVI.

	Sadras ..	A seaport in the Chingleput District, 42 miles south of Madras, containing a fort and factory and having subordinate villages attached to it.	5	950
	Bimlipatam ..	A seaport in the Vizagapatam District, 12 miles north of the town of Vizagapatam, where the Dutch possessed a fortified factory with a bleaching ground.	Factory premises only.	*Nil.*

No. XXXVI—(*Continued*).

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
			ACRES.	RS.
	Jagannathpuram.	A suburb of Cocanada, the chief town of the Godávari District; here the Dutch had a factory with the following dependencies, viz., the village of Gollapálem, the ground at Gundávaram, and the factory at Drákshháramam.	182	1,336
			SQ. MILES.	
	Palicole ..	A town 6 miles from Narsapur, Godávari District, with its dependent village, Kontéra, and a piece of ground at Narsapur.[8]	5	10,166
	Porto Novo Factory.	The Dutch Factory house and the bleaching place called Wannárpálaiyam.	Factory premises only.	*Nil.*
			SQ. MILES.	
	Tuticorin ..	(A seaport in Tinnevelly District).—The fort [9] and city of Tuticorin with its nine subordinate Commercial Lodges, viz., at Alwar Tinnevelly, Koilpabam, Shaindmangalam, Munnapar, Permakoil, the Island of Alandale, the Island of Freshwater, Kilkarai (in the Madura District), and Cape Comorin.	$\frac{3}{10}$ths.	286
1781 ..	..	(1.) The foregoing six Dutch Settlements (together with Pulicat and Negapatam)[10] were taken by the English in this year in Lord Macartney's Governorship (Local Records).		
1785 ..	..	(2.) July.—All six restored to Holland under treaty with the States General of 20th May 1784 (Local Records).		
1795 ..	..	(3.) All six surrendered to the English on war again breaking out. Lord Hobart was Governor of Madras at this period (Local Records).		
1818 ..	..	(4.) 31st March.—All six restored to Holland agreeably to the Convention of the Allied Powers in 1814 (Local Records).		
1825 ..	..	(5.) 1st June.—All six ceded to Great Britain under the treaty of March 1824 (Local Records).		

[8] The ground at Narsapur on which the Dutch Factory stood was washed away by the Godávari river many years ago.

[9] The fort at Tuticorin is exactly 3·29 acres in extent; the rest is the Dutch city surrounding it north, south, and west.

[10] *Vide* Acq. Nos. II and XXXVII.

No. XXXVII.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
			SQ. MILES.	RS.
1781 ..	Negapatam ..	A seaport in the District of Tanjore, and the terminus of the South Indian Railway. (1.) 12th November.—This, the Chief Settlement on the Coromandel Coast of the Dutch, who took it from the Portuguese in 1660, capitulated, after nine days' siege, to Sir Hector Munro, whose small army was reinforced by seamen and marines landed from the fleet under Sir Edward Hughes. This achievement was initiated by the Governor of Madras Lord Macartney (Wilks).	$1\frac{1}{3}$	832
1784 ..	..	(2.) On the 20th May peace was signed between England and the States General of the United Provinces on the basis of a mutual restitution of places captured by the arms of either during the late war—Negapatam was excepted; England agreeing, however, to treat with the States General for its restitution in *case the States should ever have an equivalent to offer*. Nothing further was done, and the place has remained an English possession.		

No. XXXVIII.

1792 ..	Districts ceded by Tippoo Sultan under the Treaty of Seringapatam.	By treaty,[11] dated 17th March, there were ceded and incorporated with the Madras Presidency (1) the whole of present district of Malabar, except Cochin and Wainád; (2) the Dindigul and Pulney Taluks of the present Madura District; (3) the whole of the present Salem District except what is comprised in the present Oosoor taluk; and (4) one taluk (Kangundi) of present North Arcot District.	13,789	44,06,000

[11] By this treaty the Coorg Raja became subordinate to the Company instead of to Tippoo. He agreed to pay the Company 8,000 pagodas = 32,000 rupees. Coorg became British territory in 1834, but has not been incorporated with the adjoining Presidency of Madras.

No. XXXIX.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
			SQ. MILES.	RS.
1795 ..	Cochin, City of.	October 19th.—Surrendered to the force sent against it by the Governor of Madras, Lord Hobart. Attached since 1802 to Malabar Collectorate.	3	11,283
1814 ..	..	Finally ceded to the British Government by treaty at the time when the other Dutch Indian Settlements, captured the same year, were restored to Holland.		

No. XL.

1795 ..	Tangacherry..	Adjoins Quilon, in the Travancore country, on the west: a Portuguese possession from 1555 to 1665, then captured by the Dutch. The fort is built on a headland of laterite, jutting into the sea, the length about $2\frac{1}{2}$ furlongs east and west, and mean breadth 1 furlong. Land-tax 185 rupees. Add land-tax of four patoms or gardens belonging to the settlement, Rupees 237. This territory came under the English Government on the capture of Cochin in this year (Local Records), and, like that city, is attached to the Malabar Collectorate.	$\frac{1}{7}$th	422

No. XLI.

1799 ..	Districts acquired by the Partition Treaty of Mysore.	July 13th.—Partition Treaty of Mysore between the English, the Nizam, and the Peshwa for the adjustment of the territories of the late Tippoo Sultan. The districts acquired by the English and now incorporated in the Madras Presidency are — (1) South Canara, (2) Coimbatore, (3) the Nilgiri Hills except South-East Wainâd lately added to that district, (4) so much of the Salem District as is contained in the taluk of Hosúr (Oossoor), (5) the Venkatagiri Kóta Taluk of North Arcot, and (6) a portion (one-third) of the Punganúr Taluk of North Arcot.	13,000	42,00,000

No. XLII.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
			SQ. MILES.	RS.
1799 ..	The District of Tanjore. Greater portion of.	Excepting former grants (*vide* [12] Devikota and Nagore and the Fort of Tanjore and the settlements of other European nations). 25th October.—Treaty between Serfojí and the Company.	3,513	41,41,203

No. XLIII.

1800 ..	All the territories acquired by the Nizam under the treaty of Seringapatam (1792) and all the territories acquired by him under the treaty of Mysore (1799), except any districts situate to the north of the river Tungabhadra, in lieu of which the Nizam ceded the district of Adoni and all other his territory to the south of that river or to the south of the Kistna below the junction of these two rivers.	Ceded by the Nizam in perpetuity by treaty dated 12th October "for the regular payment of the expense of the augmented subsidiary force." The districts now representing this cession are Bellary (except the feudatory Native State of Sandúr, *vide* Acq. No. XLV), Cuddapah, the feudatory Native State of Banganapalli and Kurnool.[13] The expression not unfrequently used in official correspondence of "the Ceded Districts and Kurnool" as if Bellary and Cuddapah were ceded to the British Government at one time, and Kurnool at another, is erroneous.	26,592	57,50,000

[12] Acq. Nos. XXVI, XXXV, and XLVIII.

[13] The district of Kurnool yielded to the Nizam and afterwards (up to 1839) to the British Government a land revenue of Pagodas 66,666, or Rupees 2,44,431 only (subsequently reduced to 1,00,000 rupees), being the peshkash payable by the hereditary Pathân Nawâbs of Kurnool. In 1839, the Nawâb was deposed and the country brought under direct administration. Subsequently the district has been enlarged by the addition of taluks taken from Bellary and Cuddapah.

No. XLIV.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
			SQ. MILES.	RS.
1801 ..	The Carnatic below Ghauts, Greater portion of	The whole of the Carnatic, Payen Ghaut, not included in previous grants: viz., the present Nellore District, North Arcot (except Kangundi and Punganúr), South Arcot (except previous grants), Trichinopoly, Madura (except Dindigul and Pulney Taluks) and Tinnevelly; also the feudatory State of Pudukóta. July 31st.—Ceded to the Company by His Highness Azim-úl Daula, Nawâb Subahdar of the Carnatic (Aitchison v, 248).	35,732	145,50,000

No. XLV.

1803 ..	Districts ceded by Rajah of Mysore.	December 29th.—Supplementary Treaty of 1803 with Mysore (Aitchison, vol. v, pp. 166–67). Under this treaty the Company, while ceding certain taluks to Mysore, obtained an equivalent cession, the whole of which is now incorporated with the Madras Presidency, except the taluk called "Era Sawer Seemy" (properly *Elusávirasíme*), which in 1804 was transferred to, and now forms part of, Coorg, viz.:— Uddantapuram .. Bellary District. Two-thirds of Punganúr. North Arcot. Wainád .. .. Part in Malabar, part in Nilgiris. Hulhul, or Hullial, in North Canara which now belongs to the Bombay Presidency. Part (not *Port*, as given by Aitchison) of Gudikota } Bellary.	1,715	1,92,000

No. XLVI.

Year.	Territory.	How acquired, and District now representing it.	Approximate Area.	Land Revenue.
			SQ. MILES.	RS.
1818 ..	Sandúr. Feudatory State of.	Fell under the paramount sovereignty of the British Government, with the rest of the territories dependent on the Poona Government, on the surrender of Bajeerow, Peshwa.	140	Free from tribute.

No. XLVII.

	Tranquebar ..	A seaport in the District of Tanjore, held by the Danes of the Raja of Tanjore at an annual rent of 4,000 rupees.		
1845 ..	..	Transferred to the East India Company by the King of Denmark, with all other Danish Settlements in India, for the sum of 12,50,000 rupees. Treaty done at Calcutta, 22nd February, and ratified by the Court of Directors of the East India Company at London, 2nd July.	13	15,756

No. XLVIII.

			ACRES.	RS. A. P.
1856 ..	The Fort of Tanjore.	October 18th.—Taken possession of by the Company twelve months from the death of Raja Sivají, without male heirs, direct or collateral.	530	7 2 0

No. XLIX.

			SQ. MILES.	RS.
1860 ..	Bhadráchalam and Ráka-palli. Taluks of.	Ceded by the Nizam by the 8th Article of the Treaty, dated 26th December 1860. Now attached to the Godávari District of Madras Presidency.	873	17,450

II.—GOVERNORS OF FORT ST. GEORGE.

Names.	Landed in Madras.	Assumed Charge of Office.	Made over Charge.	Embarked for England.	Remarks.
Mr. Aaron Baker ...	......	——— 1652	......	......	Mr. Baker was at first "Agent" for the Settlement of Madras, which was under the jurisdiction of the Presidency of Bantam in Java, from its foundation in 1639 till it was itself created a Presidency in 1653. In 1658 the Settlements in Bengal were subordinated to Madras, and so remained to 1681.
Sir Thomas Chamber ...	......	——— 1659	......	......	
Sir Edward Winter ...	......	——— 1661	Aug. 22, 1668	Jan. 19, 1672	
Mr. George Foxcroft ...	June 1665	Aug. 22, 1668	——— 1670	——— 1670	Three months after his arrival with a commission to supersede Sir E. Winter, Mr. Foxcroft was on a charge of disloyalty put into confinement by Sir E. Winter, who resumed office and retained it till the 22nd August 1668, when Mr. Foxcroft was released and reinstated by the Commission sent from England.
Sir William Langhorn, Bart.	——— 1668	——— 1670	Jan. 27, 1678	Jan. 27, 1678	
Mr. Streynsham Master.	July 7, 1676	Jan. 27, 1678	July 3, 1681	......	
Mr. William Gyfford ...	July 3, 1681	July 3, 1681	July 25, 1687	......	By the Company's Commission, dated 14th November 1681, received 17th July 1682, the Bengal Agency was made a Government "without any subordination to Fort St. George."
Mr. Elihu Yale ...	June 23, 1672	July 25, 1687	Oct. 3, 1692	......	Mr. Yale also acted during Mr. Gyfford's absence in Bengal from 8th August 1684 to 26th January 1685.
Mr. Nathaniel Higginson.	March 19, 1684	Oct. 3, 1692	July 7, 1698	Feb. 25, 1700	
Mr. Thomas Pitt ...	July 7, 1698	July 7, 1698	Sept. 18, 1709	Oct. 26, 1709	
Mr. Gulston Addison ...	......	Sept. 18, 1709	......	......	Died at Madras on the 17th October 1709.

Names.	Landed in Madras.	Assumed Charge of Office.	Made over Charge.	Embarked for England.	Remarks.
Mr. Edmund Montague.	......	Oct. 17, 1709	Nov. 3, 1709	......	Acting Governor.
Mr. William Fraser ...	May 31, 1685	Nov. 3, 1709	July 11, 1711	......	Acting Governor.
Mr. Edward Harrison.	July 11, 1711	July 11, 1711	Jan. 8, 1717	Jan. 8, 1717	
Mr. Joseph Collet ...	Aug. 28, 1716	Jan. 8, 1717	Jan. 18, 1720	Jan. 18, 1720	
Mr. Francis Hastings ...	July 16, 1701	Jan. 18, 1720	Oct. 15, 1721	......	Acting Governor.
Mr. Nathaniel Elwick...	Feb. 25, 1719	Oct. 15, 1721	Jan. 15, 1725	Jan. 17, 1725	
Mr. James Macrae ...	Aug. 30, 1724	Jan. 15, 1725	May 14, 1730	Jan. 21, 1731	
Mr. George Morton Pitt.	Dec. 26, 1724	May 14, 1730	Jan. 23, 1735	Jan. 23, 1735	
Mr. Richard Benyon ...	June 28, 1733	Jan. 23, 1735	Jan. 17, 1744	Jan. 17, 1744	
Mr. Nicholas Morse ...	June 25, 1718	Jany. 17, 1744	......	......	Madras having been captured by the French on the 10th September 1746, the government of the Settlements on the Coast devolved on Mr. John Hinde, the Deputy Governor of Fort St. David.
Mr. John Hinde ...	......	......	......	......	Mr. Hinde died at Fort St. David on the 14th April 1747 previous to the receipt of the Court of Directors' Despatch of 24th January 1747 creating Fort St. David the Chief Settlement and appointing Mr. Hinde President and Governor.
Mr. Charles Floyer ...	......	April 16, 1747	......	......	The Court's Despatch ordering Mr. Floyer's dismissal from the service was received at Fort St. David on the 6th July 1750.
Mr. Thomas Saunders...	July 14, 1732	Sept. 19, 1750	Jan. 14, 1755	Jan. 14, 1755	The seat of Government was re-established at Madras on the 5th April 1752, four years after its restoration to the English by the treaty of Aix-la-Chapelle.
Mr. George Pigot ...	July 26, 1737	Jan. 14, 1755	Nov. 14, 1763	Nov. 14, 1763	
Mr. Robert Palk ...	Oct. 2, 1761	Nov. 14, 1763	Jan. 25, 1767	Jan. 25, 1767	
Mr. Charles Bourchier.	Dec. 30, 1741	Jan. 25, 1767	Jan. 31, 1770	Feb. 8, 1770	
Mr. Josias DuPre ...	June 10, 1752	Jan. 31, 1770	Feb. 2, 1773	Feb. 2, 1773	
Mr. Alexander Wynch.	July 12, 1768	Feb. 2, 1773	Dec. 11, 1775	Feb. 15, 1776	

Names.	Landed in Madras.	Assumed Charge of Office.	Made over Charge.	Embarked for England.	Remarks.
Lord Pigot	Dec. 9, 1775	Dec. 11, 1775	......	......	Governor for the second time. By order of Mr. George Stratton and the majority of Council he was placed under arrest and detained at St. Thomas' Mount on the 24th August 1776. He was allowed to return to the Madras Garden House on the 28th April for change of air, and died there on the 10th May 1777.
Mr. George Stratton ...	June 17, 1751	Aug. 23, 1776	Aug. 31, 1777	......	Suspended from the service.
Mr. John Whitehill ...	Aug. 31, 1777	Aug. 31, 1777	Feb. 8, 1778	......	Acting Governor.
Sir Thomas Rumbold ...	Feb. 8, 1778	Feb. 8, 1778	April 6, 1780	April 6, 1780	
Mr. John Whitehill ...	Aug. 31, 1777	April 6, 1780	Nov. 8, 1780	......	Acting Governor for the second time. Suspended by the Governor-General and Council under Section IX of the Regulating Act.
Mr. Charles Smith ...	July 11, 1753	Nov. 8, 1780	June 22, 1781	......	Acting Governor.
Lord Macartney ...	June 22, 1781	June 22, 1781	June 8, 1785	......	Embarked for the Northern Ports and Bengal on the 4th June 1785, and resigned from Vizagapatam by letter.
Mr. Alexander Davidson.	Sept. 8, 1760	June 18, 1785	April 6, 1786	......	Acting Governor.
Sir Archibald Campbell, K.B.	April 6, 1786	April 6, 1786	Feb. 7, 1789	Feb. 7, 1789	
Mr. John Hollond ...	July 26, 1760	Feb. 7, 1789	Feb. 13, 1790	Feb. 13, 1790	Acting Governor.
Mr. Edward Hollond ...	June 5, 1769	Feb. 13, 1790	Feb. 20, 1790	......	Acting Governor.
Major-General William Medows.	Feb. 20, 1790	Feb. 20, 1790	Aug. 1, 1792	Aug. 1, 1792	
Sir Charles Oakeley, Bart.	Oct. 15, 1790	Aug. 1, 1792	Sept. 7, 1794	Sept. 29, 1794	
Lord Hobart	Sept. 7, 1794	Sept. 7, 1794	Feb. 20, 1798	Feb. 20, 1798	
Lieut.-General George Harris, Commander-in-Chief.	March 1797	Feb. 21, 1798	Aug. 21, 1798	......	Acting Governor.
Lord Clive	Aug. 21, 1798	Aug. 21, 1798	Aug. 30, 1803	Sept. 12, 1803	
Lord William Bentinck.	Aug. 30, 1803	Aug. 30, 1803	Sept. 11, 1807	Sept. 27, 1807	
Mr. William Petrie ...	Jan. 23, 1765	Sept. 11, 1807	Dec. 24, 1807	......	Acting Governor.
Sir George Hilaro Barlow, Bart, K.B.	Dec. 24, 1807	Dec. 24, 1807	May 21, 1813	Aug. 26, 1813	
Lieut.-General The Hon. John Abercromby.	March 6, 1813	May 21, 1813	Sept. 16, 1814	Oct. 2, 1814	Came out as Commander-in-Chief and temporary Governor.
The Right Hon. Hugh Elliot.	Sept. 16, 1814	Sept. 16, 1814	June 10, 1820	June 26, 1820	
Sir Thomas Munro, Bart., K.C.B.	June 10, 1820	June 10, 1820	......	......	Died at Pattikonda in the Bellary District on the 6th July 1827.

Names.	Landed in Madras.	Assumed Charge of Office.	Made over Charge.	Embarked for England.	Remarks.
Mr. Henry Sulivan Græme.	Feb. 3, 1798	July 10, 1827	Oct. 18, 1827	......	Acting Governor.
Mr. Stephen Rumbold Lushington.	Oct. 18, 1827	Oct. 18, 1827	Oct. 25, 1832	Oct. 28, 1832	
Sir Frederick Adam, K.C.B.	Oct. 25, 1832	Oct. 25, 1832	March 4, 1837	March 4, 1837	
Mr. George Edward Russell.	Aug. 29, 1803	March 4, 1837	March 6, 1837	......	Acting Governor.
Lord Elphinstone, G.C.B.	March 6, 1837	March 6, 1837	Sept. 24, 1842	......	Left the Presidency on the 29th September 1842 for Bangalore and Nilgiri Hills *en route* to Europe.
Marquis of Tweeddale, K.T. and C.B.	Sept. 24, 1842	Sept. 24, 1842	Feb. 23, 1848	Feb. 23, 1848	Was also Commander-in-Chief.
Mr. Henry Dickinson ...	July 5, 1809	Feb. 23, 1848	April 7, 1848	......	Acting Governor.
Sir Henry Pottinger, Bart., G.C.B.	April 7, 1848	April 7, 1848	April 24, 1854	April 24, 1854	
Mr. Daniel Eliott ...	Aug. 3, 1817	April 24, 1854	April 28, 1854	......	Acting Governor.
Lord Harris	April 28, 1854	April 28, 1854	March 28, 1859	March 31, 1859	
Sir Charles Edward Trevelyan, K.C.B.	March 28, 1859	March 28, 1859	June 8, 1860	June 24, 1860	
Mr. William Ambrose Morehead.	Oct. 16, 1825	June 8, 1860	July 5, 1860	......	Acting Governor, first time.
Sir Henry George Ward, G.C.M.G.	July 5, 1860	July 5, 1860	......	......	Died at Madras on the 2nd August 1860.
Mr. William Ambrose Morehead.	Oct. 16, 1825	Aug. 4, 1860	Feb. 18, 1861	......	Acting Governor, second time.
Sir William Thomas Denison, K.C.B.	Feb. 18, 1861	Feb. 18, 1861	March 27, 1866	March 28, 1866	Acted as Viceroy and Governor-General of India from 2nd December 1863 to 12th January 1864.
Mr. Edward Maltby ...	Sept. 9, 1829	Nov. 26, 1863	Jan. 18, 1864	......	Acting Governor.
Lord Napier of Merchistoun, K.T.	March 27, 1866	March 27, 1866	Feb. 19, 1872	......	Embarked for Calcutta on the 19th February for the purpose of assuming temporarily the office of Viceroy and Governor-General of India on Earl of Mayo's death.
Mr. Alexander John Arbuthnot, C.S.I.	Sept. 21, 1842	Feb. 19, 1872	May 15, 1872	......	Acting Governor.
Lord Hobart	May 15, 1872	May 15, 1872	......	......	Died at Madras on the 27th April 1875.
Mr. William Rose Robinson, C.S.I.	Sept. 21, 1842	April 29, 1875	Nov. 23, 1875	......	Acting Governor.
The Duke of Buckingham and Chandos.	Nov. 23, 1875	Nov. 23, 1875			

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VI.

THE ULTIMATE SOURCE OF COMMON SALT.

When we see the surface of the earth to a great extent bathed in a solution of common salt, and read of salt regions and mines of rock salt as existing in every quarter of the globe; when we consider, moreover, the vast importance of this salt in the economy of the life of our planet, whether animal or plant life, we are naturally led to speculate as to the source whence all this salt was originally derived, and the methods, hardly less than providential, which have been employed in its distribution. To this inquiry we must bring some little knowledge of chemistry, geology, and practical salt manufacture. The latter especially is of great use in explaining appearances which would otherwise prove deceptive or obscure. Common salt, it is perhaps needless to say, is chloride of sodium, composed of the two elements chlorine and sodium, and termed in chemical nomenclature sodic chloride. Let us first see what are the salt sources now existing. If we examine the crust of the earth analytically, we find it composed of a number of non-metallic and metallic elements, as oxygen, silicon, aluminium, calcium, magnesium, potassium, sodium, iron, carbon, sulphur, hydrogen, chlorine, &c., &c., frequently repeated in different combinations, but occurring in the order of frequency enumerated above. It will be noticed that chlorine is comparatively scarce, at the bottom of the list given, which contains the principal earth-forming elements; and although sodium is plentiful enough, it may as well be said, at once, that the only source of sodic chloride, or common salt, to be found at

present in the earth, is rock salt itself. Sodic chloride does not enter appreciably into the composition of the solid crust of the earth at all, except where it is found as a separate and distinct formation, known as rock salt.

If, in the earliest ages of our planet, before its substance had been differentiated into dry land and water, sodic chloride was diffused through its mass, we should expect that in the gradual denudation of the earth's surface, which followed in later ages, the sodic chloride and more soluble salts would be dissolved and retained in solution, whilst the less soluble matters would be deposited. This is almost exactly what we find to be the case. The sea is a great reservoir of sodic chloride and all the salts more soluble than it; and the land is composed of rocks for the most part sedimentary and little soluble, whilst there is no salt worth considering in it, except rock salt, which is a distinct and peculiar formation.

The most important question we have consequently to consider at the outset, is, the source of rock salt. Has it been deposited from the sea, or has it been ejected from the molten bowels of the earth, or can it have come into existence in any other way? These are problems upon which philosophers are not yet agreed. Their solution will depend a good deal upon the information obtainable from an examination of the age, extent, formation, and origin of rock salt, which will now be considered.

Geologists are wont to consider the strata which form the earth's crust, as the tablets of time, written at successive epochs, on different materials, and stamped with different characters, the characters that happened to exist at the period that the tablets were formed. If we unfold the strata and examine the tablets, we find that they are superimposed, one on top of the other, not very regularly now, since earthquakes have upheaved them and denudation has blotted them out in parts, but sufficiently so to render it a moral certainty that they had been

formed, one after the other, at long intervals, the lowest first, the highest last, and the others at intervening periods of time, according to their position. If we examine the characters stamped upon them, the certainty of their having been formed at successive epochs, becomes absolute, for we find the lowest stamped with the fossil remains of the beginnings of life, and those only, the others with higher and yet higher organisms added as we ascend, until we reach the highest or most recent, in which, and in which only, together with many of the preceding, the remains of man are found. Geologists assign a date to the earliest of these records that takes us back in imagination many hundred thousand years, and students of geology, as a rule, willingly admit the accuracy of the assumption ; in fact, the more willingly, the more they know about it. Here let me interpolate, for the benefit of those who dislike on religious grounds such wholesale inroads on time, that Hugh Miller has forged from the consideration of these facts, one of the most powerful arguments in favor of the truth of the Mosaic record—see his "Testimony of the Rocks."

These geological tablets are composed of various materials, from the flags and slates of Silurian times, to the sand and mud of yesterday's inundation. Many of these materials are repeated over and over again, showing that the same natural forces have been at work with the same substances throughout the whole record. Rock salt is one of the rocks most often repeated. It can hardly be considered a tablet itself, but it is interleaved in the record, and its position in point of time is clearly discernible. The Wieliczka mine of rock salt in Poland, the largest known, is, as far as one can judge—for its limits have not been reached yet—included in Tertiary rocks, and therefore of comparatively recent origin. Proceeding downwards in the earth's crust, or further back in point of time, we come to the Trans-Indus or Kohat salt formation, which is the oldest rock in the district,

and is considered by the Geological Survey to belong to the Eocene period. The salt rocks of the Pyrenees are also Eocene. In the Austrian Alps the salt is in the older Oolitic record. In Switzerland it is older again in the Lias. In Würtemberg it is in the Muschelkalk. In England the salt mines are in the New Red Sandstone, but many salt springs issue from the Carboniferous rocks, which are older still. In China, Burmah, and at Bakur on the Caspian, salt springs are associated with springs of mineral oil and naphtha, supposed to originate also in the Coal measures. The salt rocks of the Alleghany Mountains, Washington Co., Virginia, U.S., are Silurian. A salt spring at Keswick rises from the lowest division of the salt rocks of Cumberland, in the Lower Silurian. And the Cis-Indus, or Indian salt range proper, to which the Mayo mines belong, is the oldest of all, the oldest mine discovered in the world, being covered over by Silurian strata. It would be, in the present state of our knowledge, useless to speculate as to the age of the Mayo salt mines. Many thousands of years separate our time from that of the formation of the Wieliczka salt mine, the most recent of the series enumerated. Intervals of thousands of years separate the members of the series, one from another, and the Mayo salt mine must be hundreds of thousands of years old. It is at the very furthest extremity of the geological record, and its formation may be said to be coincident with the beginnings of life on our planet. So much for the age of rock salt deposits that are known, and whose ages have been determined. Other undiscovered rock salt formations doubtless exist, whose ages we have no means of ascertaining.

It may be fairly inferred, as a conclusion from the foregoing, that rock salt has been forming, in an intermittent way, throughout all knowledgable time, from the Pre-Silurian period to the Tertiary; but that the Silurian and Carboniferous periods were the most prolific in such deposits. There is no evidence,

that I am aware of, of the formation of rock salt in Post-Tertiary times—a long interval, which includes the Pre-Glacial, and perhaps the Pliocenic, the Glacial, Post-Glacial, Pre-Historic, and Historic—the last, or Historic division of which, is known to occupy about 6,000 years.

I purposely exclude from this consideration the salt of the Runn of Kutch, and other similar superficial deposits of clearly marine origin, which do not possess the characters of rock salt.

Let us now see the geographical distribution and extent of rock salt formations. As might be expected, rock salt has very wide geographical limits. It is found in all the older continents of the world, and its discovery in the newer, as Australia and New Zealand, is probably a question of time. It will be sufficient here to mention the principal countries in which it is found. In Europe, it is found in Austria, Poland, Germany, France, Switzerland, Hungary, Spain, England, and Ireland. A vast chain of salt mines extends along each side of the Carpathian mountain range, comprehending the salt mines of Wallachia, Transylvania, Galicia, Upper Hungary, Upper Austria, Styria, Salzberg, and Tyrol. In Asia, it is found in India, Afghanistan, Persia, the Kirghis, and Asiatic steppes of Russia, Burmah, and China. In Africa, it is found in the northern Highlands, in Morocco, Algeria, and also in Madagascar. In North and South America it is found in Washington Co., Nevada, the Andes, the Alleghanies, the Oregon Mountains, Bolivia and Peru, and in an island in the Gulf of Mexico.

As regards its present level in the earth's crust, rock salt is found at the surface, and at various elevations, above and below it. It is also found above and below the level of the sea. The Wieliczka mines are 1,000 feet below the level of the soil, and 400 or more below that of the sea; their lower limits are undiscovered. At Middlesborough-on-Tees, rock

salt was found in a bore hole at a depth of 1,293 feet. At Cordona, in Spain, a mountain of rock salt, the depth of whose base is unknown, rises to upwards of 500 feet. The Trans-Indus salt hills reach an elevation of 200 feet. The great salt lake area of lake Utah, equal to about 2,000 square miles, is situated at an elevation of about 4,000 feet, in the Rocky mountain district. The rock salt at Hallein, near Salzburg, is 3,300 feet above the sea level; and that at Arbonne, in Savoy, is 4,000 feet higher, being perched in the region of perpetual snow at an elevation of 7,200 feet above the sea level.

The physical characteristics of rock salt, and the formation of its beds, will claim our attention before we can satisfactorily attack the problem of its origin; but as these considerations lead up directly to the question of origin, it is as well to open that question here.

A good deal of obscurity shrouds the origin of rock salt deposits, and geologists are not all agreed as to their mode of formation. Dr. Fleming, who surveyed the geology of the Indian salt range in 1848–53, attributed the salt formation to eruptive agencies, as the result of his own observations. Sir R. Murchison says that other distinguished geologists have arrived independently at the same conclusion. Dr. Macculloch remarks of all rock salt formations, "The purity and solidity of the masses of rock salt, their bulk, their insulated and peculiar positions, with many other facts on which I need not now enter, prove that they could not have been derived from the ocean in the manner thus supposed, nor probably in any manner. They are special and original deposits, in whatever way produced." On the other hand the majority, perhaps, of writers upon this subject, look upon rock salt as being a sedimentary rock, of aqueous origin, and formed from the sea. It is nevertheless admitted that the aqueous theory is open to several and serious objections, which require to be

overcome before the theory can be finally established. To explain away these difficulties, and to prove that the sea is the true mother of rock salt, is the task that I have set myself to accomplish in this paper.

I will now notice some of the chief physical characteristics of rock salt. Its chemical composition, it will be hardly necessary to state, is precisely the same as that of ordinary sea salt.

Rock salt is as unlike sea salt, as we know it under the form of "bay" salt, as any two salts having the same composition could well be. Rock salt, in some places, the Trans-Indus range, and Cordona in Spain, for example, forms solid masses swelling out of the earth for hundreds of feet in cliffs and mountains; in others, it sinks deep into the bosom of the ground—a hard rock—which has to be mined with pick and blasting-powder.

It is for the most part translucent, and of a bluish or pinkish color, resembling masses of dimly transparent, flawed glass; yet fine blocks of colorless transparent salt occur in nearly all mines. A rectangular polished block of pure salt, 37½ cubic feet, weighing 2⅕ tons, was sent from the Mayo mines to the Vienna Exhibition. Newspaper print can be read, through more than six inches of such transparent rock salt. It is as hard or harder than gypsum, and various fancy articles, such as balls, platters, salt-cellars, etc., are turned from it on the lathe. In continental mines it is worked up into statuary having the light effects of alabaster. It forms the pillars, stairs, and horse stalls, used in the rock salt mines.

If we examine closely, however, we find that in all its other properties—chemical, physical, therapeutic, organoleptic, &c.—there is no difference between rock salt and ordinary bay salt. Rock salt, like sea salt, crystallises, in the first, or cubic system, as is demonstrated by its cleavage,

and by isolated crystals found scattered through the mass. Rock salt is stratified. It occurs in beds, varying from a few inches to 1,200 feet, and more, in thickness. In the Mayo salt mine, the whole formation is calculated to be 600 feet thick, composed of strata, each of which is supposed to represent one year's deposit. These strata vary in thickness from 6 inches to 20 feet, and are separated from each other by clay beds, red gypserous, and violet, marls. It is found that the salt is purest, and least stained, in the middle of the seam. *Gypsum beds overlie the salt beds.* In Cheshire, the rock salt is found in horizontal strata, separated by beds of clay and gypsum. Salt crystals are found infiltrated through some of the clay beds. In Würtemberg, the salt is enclosed in seams of shell limestone. At Ischl, in Upper Austria, it occurs in horizontal bands, running through the mountains overlooking the town. These mountains are composed of bands of limestone and rather impure rock salt, separated from each other by colored gypserous marls. The limestone above the salt is scarcely distinguishable in structure or fossils (Oolitic) from that below it.

In general outline, beds of rock salt are seldom of uniform thickness; they are thickest about the centre of the deposit, and thin out towards the circumference, having a lenticular formation. They are often linked together, forming chains, and, when so connected, lie in about the same horizontal plane

The salts associated with rock salt are precisely those which are formed in association with it in the manufacture of common salt, as gypsum, sodic and magnesic sulphate, potassic and magnesic chloride, &c.

We have now before us, as many of the ascertained properties and relations of rock salt, as will be useful in guiding us to form an opinion of its origin. It will not have escaped notice that most of these mark it as a sedimentary rock of aqueous origin. I will now proceed to

examine, in detail, its claims to be considered as an aqueous rock.

Many salt areas, or salt regions as they are called, are made up of a number of salt deposits, linked together as it were on one horizon. The explanation of this phenomenon is so intimately associated with the theory of the gradual upheaval of areas of dry land from the ocean's bed, that I must notice both theories together here. One can easily imagine that if large tracts of undulating country, forming natural basins, were submerged in the sea and brought to the surface again, the natural basins would be filled with salt water, which would, on evaporation, yield linked salt deposits of the kind referred to. Now this is almost precisely what is believed to have happened, for it matters little whether the undulating surface was an original sea-bed, or one formed by subsidence. Original sea beds are unknown, at present.

The theory of the gradual interchange of dry land and ocean, which is as well established as any demonstrated geological fact, is associated in many ways with the study of the origin of salt deposits. It is of the greatest importance in explaining the wide geographical distribution of rock salt. It is the key to its position in so many pages of the palæontological record, from the Tertiary to the Silurian era. It furnishes the reason for the otherwise inexplicable position of rock salt deposits at various elevations above, as well as below, the present sea level.

It is believed by geologists, and for ample proof I must refer the reader to works on geology, that slow upheavals and subsidings of land have been going on since the beginning of things, as far as we can trace them; that the dry land has been washed, by gradual denudation, into the sea, and that other dry land has risen from the sea to take its place; that there have been compensatory sinkings as well

as upheavals; and that this interchange of places between the bed of the ocean and the surface of the ground has not taken place once, but often; so that scarce any land exists, except perhaps the tops of high mountains, which has not had its turn, more than once, above and below the water.

If there were such upheavals of large areas from the salt sea, we should find salt deposits upon them. That there were such partial elevations in Pre-Silurian times is evidenced *inter alia*, by the rock salt formations of the Indian range. The salt rocks of England go to prove the same thing for the Carboniferous era: those of Switzerland for the Lias; those of the Austrian Alps for the Oolitic; and so of the rest, up to the Tertiary period, in which we find the Vieliczka salt mine. The covering strata lying over these rock salt deposits moreover demonstrate, that the deposits have, after their formation, sunk again into the depths of the sea, and, whilst some have remained there for ages, before coming to the surface, others have oscillated, as it were, above and below sea level. Hence we find layers of rock salt, separated by intervening sedimentary strata, placed over each other in irregular succession, and covered in by other sedimentary rocks. This last fact, however, I will account for presently in another way.

We have other evidence that these elevations of fixed areas were partial, that they took place in each succeeding epoch, and that they were widely distributed over the face of the globe. Rock salt formations confirm this evidence in a conclusive manner, and they further tell us what areas were elevated, and at what periods.

It will be seen, therefore, that the assumption of the marine origin of rock salt is closely linked with that of the movement of the earth's crust, which ranks as a well ascertained fact. This alone creates a strong bias in favor of the marine theory of its origin.

But there is also much internal evidence in rock salt formations that they were formed from the sea by deposition. Rock salt deposits are described as lenticular, that is to say, the *greatest depth* of the salt is found *in the centre*, and as the edge is approached the deposit thins out and diminishes. The same description applies to most natural basins, whether lakes or seas. If rock salt were of aqueous origin and formed from marine basins, the deposit would have the shape of the basin, below, whilst plain above; it would form a plano-convex lens, thick in the centre, and thinning out to the circumference; convex below, and plane at the surface, such in fact as we find it. Here is another strong presumption in favor of its marine origin.

But rock salt is also a stratified rock. When undisturbed, it is found in horizontal beds, and these beds are often interleaved and separated by others of clearly aqueous origin, as gypsum beds, sandstone, limestone, marl, &c. Stratification is admitted to be one of the most distinctive marks of the aqueous origin of a rock formation, and this stratification, in alternate layers with sedimentary rocks, is almost conclusive proof that rock salt itself is sedimentary.

Although rock salt deposits are by no means fossiliferous, still bivalve and other marine shells, casts of fish, &c., are not wanting in most deposits to testify to their marine origin. In the *Cis-Indus* salt range, the oldest known, shells of one genus of mollusca have been found. A block of rock salt from the Wieliczka mine—the youngest mine of rock salt and about the finest in the world—on being examined by Professor Philippi, was found to contain 5 zoophytes, 1 echinus, 1 serpula, 7 conchifers, 8 univalves, 3 crustaceans, and a cirithium identical with one now living in the Mediterranean. Such instances might be multiplied.

Again, certain other salts of peculiar significance, as calcic sulphate, are almost invariably found associated with common

salt in rock salt deposits. At Stassfurth, in Prussia, magnesic sulphate is found; and lately, a large deposit of sodic sulphate was discovered. At Vilia Rubia, in Spain, glauberite, a compound of the anhydrous sulphates of lime and soda, occurs in the salt. In the Mayo mines, magnesic sulphate and chloride are found in combination with other marine salts. One or more of these salts have been found in connection with all salt mines, which have been thoroughly explored. Now, these are, as before stated, precisely the salts which are formed naturally, wherever sea-water is evaporated to dryness. They do not all form at the same time, or temperature. Magnesic sulphate for example, in sea brine, changes, at the freezing point, into sodic sulphate. Magnesic chloride is so very deliquescent that it rarely can be obtained by solar evaporation. We could not therefore expect to find them all present in a single salt mine; even if there were not excellent reasons connected with their solubility, for expecting the contrary. It is enough, therefore, that we do find them all represented in different rock salt formations.

As illustrating in a practical way the relation of modern sea salt formation to ancient salt deposits, it may be interesting to mention that a few years ago, a French company, which had a very large business in the manufacture of sodic sulphate, by the winter evaporation of sea brine, was obliged to stop work, owing to the discovery of a large deposit of sodic sulphate in the Stassfurth rock salt mine.

But the most emphatic instance of the association of sea salts with rock salt is to be found in the presence of gypsum. Gypsum, or calcic sulphate, is a very insoluble salt, and therefore one of the earliest deposited in the evaporation of sea brine. It deposits from sea water when the latter is evaporated to about one half of its bulk, almost irrespective of temperature. As, owing to its insolubility, it is rarely taken

up again, we would expect to find it with rock salt, if the latter were of marine origin. As it happens, we do find it. Gypsum is always present with rock salt. They go together so much as a matter of course, that even the unobservant Afghans have taken notice of the circumstance, and have christened gypsum, "the brother of rock salt." This relation of gypsum to rock salt will have to be gone into, more particularly, when reviewing the objections to the theory of the aqueous origin of rock salt.

Rock salt and the gypsum associated with it are often stained, by colored clays, a variety of hues, of which, however, pink or some shade of red, is the most common. Common salt, manufactured from the sea, with indifferent care as to cleanliness, is much stained in the same colors. It is remarkable, too, that a pink scum forms on the surface of the salt water at many salt manufactories, staining the salt a pink color; so that the produce of some salt works may be known by this tinge, even as the produce of some salt mines is known by its red shade. It would be useless here to enter into a discussion as to the nature of this coloring matter; it is either organic, or an oxide of iron. It may be one or the other, according to circumstances.

We now come to the crystalline structure of rock salt, and here we touch the edge of the difficulty regarding the aqueous theory of its formation. It is objected to this theory that the homogeneous, transparent, crystal, structure of the rock is unlike any product of the evaporation of salt water as we know it. Such indeed is the case, but we have no large inland salt sea, evaporating, to compare with at the present time, except the Dead Sea, in which the process is not sufficiently advanced for our purpose. There are, however, some inland salt lakes from which we may take a lesson with advantage. Lake Oroomiah, in Persia, and the Elton Lake, in the lowest part of the great Aralo-Caspian plain,

offer examples of the formation of rock salt by deposition in the beds of inland lakes which are gradually evaporating and filling up. Lake Kosiak, situated on the right bank of the Irtysh in Asiatic Russia, is a similar example. Some of the zoutpans, in South Africa, are likewise solidifying. But the best illustration is found in Lake Inder, which lies in the valley of the Ural River. The bottom of this lake is an immense solid mass of salt, covered with a shallow sheet of brine. At the end of summer, the lake entirely dries up, and forms one solid block of salt. These lakes teach us that large masses of solid salt may be formed in comparatively small areas, by evaporation, under certain climatic conditions, even at the present day.

Let us consider the conditions which prevailed when the old rock salt was formed, as far as they affect crystalline structure. Some deposits, it will be remembered, are 1,200 in thickness. Considering that it takes about 6 cubic feet of saturated brine to produce one cubic foot of salt, and that when salt deposits, the brine has a specific gravity of 1,208, and lies in the deepest hollow of its basin, we can imagine what an enormous depth of dense brine must have presided over such salt formations. The salt must have been formed at profound, motionless depths, in which the stillness was only broken by the growth of crystal structure. It must have been formed under gigantic pressure, from such depth and density of brine. We have no parallel to these conditions of crystal growth, at the present day; we can only imagine, *à priori*, that the resulting crystal must be very perfect, resembling a mass of glass.

But the effect of crystalline contraction, the effect of lapse of time, and the effect of superincumbent pressure have also to be considered. The force of crystal growth is a very powerful one. Where, as in the growth of ice, it takes the form of expansion, it bursts iron pipes with ease. In salt

masses its tendency is to contraction, to perfection of crystalline structure; given a sufficient lapse of time, and suitable conditions, and it will effect its purpose. What period of time has this force had at its disposal in the most recent of our mines of rock salt? As before stated, many thousands, nay, many tens of thousands of years. During all this time, moreover, what pressure has been at work on the salt mass crushing it down, with the irresistible force of the most powerful hydraulic ram, into a solid homogeneous mass! The pressure, like the time, is beyond our computation; we can only measure it by its effects. We see the rock salt sometimes interleaved with sedimentary masses, which have been crushed into compact rocks. We find it covered over with hard coal, which we know to have been, once, a loose vegetable deposit. We find a variety of other rocks, overlying the salt, bearing the same testimony with more or less force; and in some cases, as in the Austrian Alps, we find the salt buried, at the present time, under masses of rock, whose weight and pressure we can calculate. What wonder, therefore, that rock salt is a crystalline mass, and not as the salt deposits recently formed in our shallow bays. If the case were otherwise, there would be good ground for rejecting the marine hypothesis. Let it be remembered that the protozoa, whose fossil remains make up the chalk cliffs of England, were swarming in life, in our northern seas, long after the deposition of all but the most recent beds of rock salt.

Another peculiarity of rock salt, which is held by some to tell against the marine view of its origin, is the rare presence of fossil shells and fishes, &c., in its formations. It is argued that if this salt was deposited by the evaporation of an inland sea, we should find abundant organic remains in it, as we know that salt acts antiseptically, that is, it preserves organic remains. This comparative absence of fossils can, however, be explained on natural grounds. Life ceases to be

supportable in brine of a certain density. In the Madras salt works, it is found that the mollusca, crustacea, fishes, &c., which find their way into the salt beds, whether voluntarily, or through the agency of the lift pumps, begin to work their way out expeditiously, by all possible channels, as soon as the brine reaches a density of 5, or 6°, Beaumé ; and that at 7, or 8°, Beaumé, those left behind, sicken and die, so that at 9° Beaumé, not a living animal is left in the brine. At 7° Beaumé, the sea water has been reduced, by evaporation, to about one-half its original bulk, gypsum is depositing and continues to deposit for some considerable time, until the brine is reduced to one-quarter of its original bulk; but common salt has not formed, nor does it form until long after, until but one-tenth of the original brine remains. So that, if we imagine that all possible means of escape were cut off from the inhabitants of our evaporating sea, and all had perished, we should find their remains buried in the soft mud under the gypsum, which would subsequently cover them over with a thick deposit. But, there is reason to suppose that the gradual elevation of salt areas was a protracted work of time, in which opportunities were afforded for the living contents of the rising estuary, or sea, to join the main ocean, before evaporation had made the brine uninhabitable. We can easily conceive, how, at the first warning of increase of density, every living creature would make for the connecting straits and shallows, and dart into the great ocean; and how finally, some molluscs and crustaceans, overtaken in their slow flight, would fall, die, and be buried, at the extremity, or confines, of the shrinking sea, far away from its central salt deposit. In point of fact, almost all salt deposits do contain the fossil remains of a few specimens of the marine fauna which existed at the date of their formation, and not seldom in the rock salt itself; from which it may be argued, with a considerable approach to certainty,

that these marine specimens lived and died in the neighbourhood, and were washed into the deep salt area, from the surrounding gypsum, after salt formation had commenced.

The most serious objection to which the aqueous hypothesis is open is founded upon the abnormal position of the gypsum which overlies the rock salt, at some places, instead of being beneath it, as it should be theoretically, since it is much the less soluble salt and the first to deposit, and since it does practically lie under the salt, at all modern salt deposits which have been observed, in rectangular artificial basins. This is unquestionably a surprising difficulty. It is not, however, an insuperable one. There are various ways of accounting for the anomalous position of the gypsum, and some of these ways have much force of reason and truth about them. Some argue that the gypsum was originally deposited beneath the salt, but that it was subsequently removed by subterranean denudation, by hot springs or currents, forcing their way up from lower levels. Others think that upheavals and overthrows caused by the secular cooling of the earth crust, or by volcanic action, of which we have much evidence in the condition of the salt and other rocks, may have led to a reversal of the original order of the deposit. It may be said, too, that we can hardly deduce from theoretical and observed conditions, at the present day, the sequence of events which took place remote ages ago, when some of the conditions of soil and brine were certainly different from what they are now.

I am of opinion that the explanation is, after all, not very far to seek. There is no difficulty, whatever, in accounting for the presence of gypsum, on top of the salt deposit, or in strata running through it. The problem lies in the absence of gypsum beneath the salt. Now, as to this, gypsum is found at the bottom of the salt deposit at many places which have been worked out, or have been exposed in section. It is so found at Ischgl in Upper Austria, at Wimpfen, in Würtem-

berg, and at other places. And it may be said, too, of the great majority of rock salt formations, that the true bottom has never been explored. In many cases the bottom of the rock salt has not been reached ; in many others, as in Cheshire, where rock salt strata alternate with strata of marl, the exploration is given up as soon as inferior salt is tapped in deep workings, or, as soon as marl is found underlying it at unprofitable depths. The lowest stratum of rock salt overlying the gypsum is generally so inferior, and mixed up with gypserous marls and shell limestone, as at Wimpfen, that where these things are done for profit, exploration is at once abandoned. It is most probable that gypsum does underlie the salt oftener than is suspected, but as will be shown in the next para. it is not essential to the aqueous theory that it should be so.

The way in which gypsum comes to overlie the salt deposit is this. Gypsum attains its maximum of solubility when the density of the sea brine equals 4° Beaumé, or specific gravity 1,033. If the volume of ordinary sea water be taken as 1,000, its volume, after it has been evaporated to the density specified, will be about 850. If there be sufficient gypsum to form a saturated solution, any further diminution in volume, accompanied as it must be by increase of density, tells on the contained gypsum, a portion of which becomes insoluble and separates. This deposition of gypsum from sea brine continues from volume 850 until the volume of the sea water is reduced to 100, or to one-tenth of its original bulk, at which point hardly a trace of gypsum remains. At this point the deposition of common salt begins. We have now to consider the shape of the sea basin in which the deposit is taking place. Without going into mathematical figures, it is sufficient to observe that it has a slope from the circumference to the centre, and that as the volume of the sea diminishes from 1,000 to 100, its waters naturally gravitate towards the centre or deepest part into

which they finally subside. It is precisely whilst this shrinking is going on from 850 to 100 volumes that gypsum is being deposited, so that when the brine reaches the centre and begins to deposit salt, very little, or perhaps no gypsum may be left in it. It all depends on the configuration of the sea bottom. In all ordinarily shaped sea basins, therefore, having shelving shores sloping to a central abyss, we will have a large deposit of gypsum laid bare by the receding brine, and in many cases the whole of the gypsum will be thus left behind away from the salt.

What follows is this. Common salt is deposited in a large circle in the centre or deepest part of the sea bottom. This may go on uninterruptedly until all the salt has been parted with, in which case, we would have a large central salt deposit, surrounded by a much larger circle of gypsum, deposited on a slope, at a higher level. It only needs the intervention of rain and flood to complete the picture; the gypsum is washed over the central salt deposit and settles upon it, covering it over with a thick impermeable stratum, which protects it from further injury and seals it up for future use. But more likely, storms will overtake the process, more than once, before its completion, and floods of gypsum and mud, with mollusc shells perhaps, will contaminate the brine, and settle down upon the salt, which, in its turn, will form again upon the gypserous bottom; and so alternate layers of rock salt and gypsum, or gypserous marls with shell limestone, &c., will come to be formed, precisely as we find them.

After an uncertain lapse of time, this salt basin would be completely filled up, by the gradual deposition of sedimentary matters carried in by streams, or by the dust of aerial currents. Once filled up, our rock salt basin loses its power of drawing solid materials to itself; it forms a part of the great highway to the sea, and comes under the influence of

denudation. If there have been hills upon its boundary, those will send down streams upon it. If there are no hills, it will be in the track of some distant watershed sending its winding river to the sea; or perhaps, it will be the scene of volcanic action; or of secular cooling and contraction, with upheaving of the earth crust in irregular mountain thrusts. The contorted strata of many of the rock salt deposits tell of the pressure and crushing to which the salt has been subjected by these very movements. Indeed, the present stratigraphical condition of many salt deposits, and the myriad cracks and flaws in the salt crystal can hardly be attributed to any other cause. In whatever way produced, streams will cross the site of the salt formation, and the work of denudation will be in time accomplished. Streams will grow into rivers, which will cleave across the ancient sea basin, cutting it down from its topmost stratum to the base of the rock salt deposit, or lower still; and as the work progresses, hills and cliffs of rock salt, with their gypsum and other coverings, will grow up on either hand, as at the Trans-Indus salt range, and at Cardona in Spain. Or it may happen that the site is not the scene of powerful denudation, and that the rock salt will be buried out of sight, and out of knowledge, for an indefinite time. Or that the movement of elevation continues until the rock salt lies secure at such altitudes as at Hallein, or Arbonne, where it is actually found. Or that movements of depression carry the region once again to the bottom of the ocean, where the rock salt, secure beneath the gypsum, receives an enormous addition to its other coverings. All these are not only possibilities, they are certainties, and have happened. Geology will bear me out in this. It would pass the limits of this paper to enter further into detail.

I have now disposed of the chief objections to the marine view of the origin of rock salt. There remain some minor objections of comparatively little account. Superior salt is

sometimes found crystallised in lenticular, or ring-shaped masses, in the midst of inferior salt; this is not a usual sedimentary arrangement; it is a difficulty. But, when we consider that we have to deal with crystalline masses of unexampled extent, and with crystalline forces which are imperfectly understood, this crystal, within a crystal, has nothing startling about it. It exemplifies, in crystal masses, a form of natural selection which we see illustrated by concretionary nodules, elsewhere, and by the lenticular gypsum crystals which are found in salt marshes.

Again, veins of rock salt, at various angles, are found running through the stone, or indurated clay beds, associated with rock salt in some mines. At Cheshire, for instance, such veins occur in the flag beneath the salt. From the nature of these stones, it is not difficult to suppose that they may have been traversed by cracks and fissures, into which brine would percolate, and crystallise. The salt is crystallised, and not fused in the veins, as it would be, if of igneous origin; and very perfect cubic crystals are often found in such situations.

These difficulties, which are of little account in themselves and easily explained away, lead up to the igneous theory of the origin of rock salt. The presence of sodic chloride in hot springs is taken as evidence in the same direction; as is also the presence of common salt in the eruptive matter of Mount Vesuvius. All we know about hot springs, is, that the water comes from a distant and perhaps warm region, though it may receive its warmth in transit, and that the water takes up in solution more or less of the soluble salts it comes in contact with. Rock salt deposits are abundant enough in most parts of the world to account for the presence of salt in such springs. Hot springs are very common in the salt regions of China and Burmah. Perhaps the association of coal and mineral oil, with salt, may

account for the heat, as well as for the saline phenomena of such springs. As to Vesuvius, the salt formed in its eruptions is associated in such proportions with the minerals which invariably accompany rock salt formations, that geologists have little doubt that the volcano is situated over an ancient salt bed. As a rule, with the exception of Vesuvius, and Heckla in Iceland, whose craters are incrusted with salt, sodic chloride is not a volcanic product; and Heckla, like Vesuvius, it should be noticed, is situated near the sea, and submarine volcanic action takes place at times off the coast. Primary and eruptive rocks contain but little trace of sodic chloride. It never forms dykes, and there is no stratigraphical or other evidence of its igneous origin.

In fact, it may be said, that the igneous theory takes its origin, not in any positive evidence of igneous action in rock salt, but in the evidence afforded by the position of gypsum, and other facts, apparently excluding the aqueous theory. Hence the consequent necessity for starting some other theory to explain the presence of rock salt. It is true that semi-anhydrite, a sulphate of lime crystallising with 6·21 parts per cent. of water, which forms only under pressure and at high temperatures, is sometimes found in the Indian salt ranges. But this need only confirm the evidence, which is otherwise strong enough, that many rock salt formations have been subjected to volcanic action. There are fatal objections to the igneous theory which practically put it out of consideration. The association of rock salt with naphtha and petroleum is justly held to exclude igneous action, since these would otherwise have been burnt off and volatilised. The unburnt organic remains, the unburnt coal, and the presence of unburnt gypsum in all salt formations are convincing proofs that these formations had not a birth and baptism of fire. In conclusion, it may be affirmed that the weight of evidence is entirely with those who believe that rock

salt is of aqueous origin, and that it is a marine deposit. The appearances which seem to bar this theory are easily explained away, whilst those which establish it are so numerous and so cogent that the theory passes as a reasonable belief worthy of acceptance.

We have now to consider the effect of this conclusion upon the composition and qualities of the ancient or palæothalassic sea. We have extracted, in theory, from this sea, an enormous body of common salt. Let us endeavour to estimate the amount. There are not sufficient data available to form an accurate estimate even as to the quantity of rock salt at present *known* to exist, but some idea may be formed on the subject, by a passing glance at some of its principal formations. The most extensive mines in the world are those found on the continent of Europe, extending for 500 miles along the Carpathian mountains, stretching out laterally for 100 miles and having a thickness in some places of 1,200 feet. In neighbouring Galicia the Wieliczka salt mine is the largest known. It has been worked for the last 629 years. Some of its galleries stretch for 40 miles and yet the resources of the mine have scarcely been touched—so great are its conjectured dimensions. The area occupied by the Trans-Indus or Afghan salt region is about 1,000 square miles, and it is estimated that about one-fifth of the entire area is taken up by salt, which frequently occurs in marked exposures. In one place, for a stretch of four miles, the rock salt forms bold cliffs, rising to 200 feet, on either side of the banks of a stream. The bottom of this salt deposit is unknown. Mr. Wynne of the Geological Survey estimates its thickness, in parts, at 1,200 feet. The same authority estimates the Cis-Indus, or Indian, salt range, as extending 134 miles in length by about 5 miles in breadth, comprising an area of about 670 square miles. The salt zones in this region have a thickness

ranging from 100 to 275 feet. In England a large bed of rock salt lies beneath the valley of Cheshire, from Malpas to Congleton. There are about 25 pits now open in this region, of which seven are at Marston, and six at Winsford. About 40 old workings are closed. The Northwich mine has been at work for 210 years. The two beds of rock salt in the Marston mine are, each, about 90 feet in thickness. The annual output of rock salt and salt made from rock salt brine, in England alone, is estimated at about two million tons at the present time. This is but a rough sketch of the mass of rock salt in three or four of our best known salt regions; taken in connection with the geographical distribution of rock salt, it enables us to form some idea of the enormous masses of rock salt which exist scattered over the globe, known, and unknown.

It would not be rash to estimate the known salt deposits at one-half of the existing whole, since much more than half the globe is covered with water and out of ken, and the mineral resources of the habitable portion are as yet imperfectly explored. This salt, if the views herein expressed regarding its formation be correct, was separated from the sea by evaporation. In this process, oceans of salt water have been evaporated, and oceans of aqueous vapour have been carried back, in clouds, from the rock salt formations to the sea. We have no reason to suppose that the sea is either greater, or less, in volume, now, than it was in the Pre-Silurian period. On the contrary, geologists conclude that it remains the same. Hence we have herein, if the aqueous theory be correct, excellent reasons for supposing that the primeval sea was much more saline than our own. Dr. Warth has calculated the cubical salt contents of the Mayo mines at 10 cubic miles. From the very early period at which the Mayo mines were formed, down to the Tertiary, we have the geological record as a witness, that

an uninterrupted series of movements of the earth's crust has resulted in the almost continuous extraction of salt from the sea, by the cubic mile, and the restoration of fresh water, in the proportion of 60 cubic miles of water to one of salt. It follows that down to the Tertiary period the sea has been diminishing in density. We may even make a rough calculation of its loss. The careful researches of M. Krummel show that the volume of the entire sea is 3,138,000 cubic miles. Judging by its chemical composition, at a moderate estimate, it would contain at the present time over 50,000 cubic miles of salt. Say that the Mayo mine represents only the one-hundredth part of the existing salt deposit. This is putting the salt deposits at the very largest, for the Mayo mines, from comparisons I have made, would seem to be equal to much more than one-hundredth part of all known, and unknown, salt formations. Thus we get 1,000 cubic miles as the outside measure of all existing rock salt formation. From this it would appear that the sea has, after all, only lost about 2 per cent. of the salt it originally held.

The same reasoning applies to the movements of gypsum. We may be sure that it was extracted from the sea in a like ratio, and that the total loss, up to date, is 2 per cent. of the amount once held in solution.

Now, this loss of 2 per cent. of the salt once held in the sea (of 1,000 parts in 50,000) is almost inappreciable. The English Channel, according to Schweitzer, contains over 2·70 parts per cent. of salt. If all the salt in all the rock salt formations was restored again to the sea, the channel water would contain less than 2·76 per cent. of salt, that is, its increase of salinity would be represented by less than ·06 per cent. No one would be the wiser for it, not even the fishes.

But there is reason to suppose, that, for some thousands of years past—since the Tertiary period—rock salt has ceased to form, and a recuperative process, as regards the salinity of

the sea, has been taking place instead. Rains and rivers have been washing the hills and valleys of the earth of their soluble salts, and large quantities of sodic chloride have been carried back to the ocean. It has been calculated that the River Mahanady, which discharges into the Bay of Bengal, near Cuttack, carries into it in solution, daily, about 3,000 tons of sodic chloride. Much of this salt is, doubtless, restored to the sea from the Silurian or Cis-Indus salt deposit, the very oldest known. This process has been going on for some thousands of years, so that the sea is probably now stronger in salts than it was in the Tertiary period, but the difference would be in any case trifling. The effect of salt manufacture over the world may be neglected, since bay salt obviously soon comes to form a surface deposit, which regains the sea within a few years.

From all this, it is evident that the palæothalassic sea was hardly different, in specific gravity, or salinity, from that which now exists, and that therefore the same species of plants and animals could flourish in it. This conclusion agrees with that arrived at by palæontologists working on a different line. They found the marine fossil fauna and flora of the very earliest times so little different from the primitive types now existing, that they conjectured them to have lived under marine conditions similar to those now obtaining. With regard to the salt restoration process, it may be interesting to note that a cubic mile of rock salt weighs 6,111,298,900 tons, taking the weight of a cubic foot at 93 lbs. Ten large rivers, such as the Mahanady, carrying off 3,000 tons a day, would require over six thousand years to dispose of one cubic mile, so that there is no immediate prospect of a rock salt famine. Mr. Warth's mine alone would keep us in rock salt for 60,000 years.

We have now traced the salt back into the palæothalassic sea. Let us go back one step further and try to obtain a

glimpse, even though an imperfect one, at its previous condition. It is considered certain, by astronomers and geologists, that, in the earliest Azoic period of creation, the temperature of the earth was so high that it formed a molten mass, and all volatile bodies, or those capable of being converted into vapor at high temperatures, surrounded the globe as an atmosphere; that the ocean literally boiled, and hot steam mixed with the other atmospheric vapors. We may imagine sodic chloride to have existed in the gaseous state at this period. There can be little doubt about the sodium element having so existed, since by the aid of the spectroscope we see it in the atmosphere of the sun and those stars, as Aldabaran and Betelgeux, which have been carefully examined. There is some doubt about chlorine, since it hardly exists, as such, at higher temperatures than 800° C. The recent experiments of Victor and Carl Meyer, of Zurich, show that it diminishes in density up to 1,200° C., at which point it is about 1·62, and increases in volume one-half, becoming alotropic. Be that as it may, however, with the gradual fall of temperature, sodic chloride would form, and deposit upon the surface of the land and water: and as the cooling process continued, the aqueous vapor would condense and fall upon the earth in the shape of rain, which would dissolve and wash out all the salt into the sea. In the end the sea would gradually lick up and appropriate, by constant interchange of elements, rising clouds and falling rain, all the soluble salts on the face of the earth, except those protected by insoluble coverings. And so the sea would become the great reservoir of soluble salts that we find it, as stated in the beginning of this paper.

Before leaving this part of the subject let me draw attention to the remarkable provision of nature which places gypsum, one of the least soluble of rocks, uniformly as a covering over sodic chloride, one of the most soluble, as, to

this, in all probability, we owe the preservation of the vast stores of rock salt which now exist. If the presence of salt everywhere is considered an evidence of design in the creation of the world, how much more so is this arrangement, which so effectually preserves it through untold ages of cosmic change.

In considering the source and origin of common salt I have purposely overlooked one natural feature, possibly concerned, even at the present time, in its formation, namely, chemical agency. I have indicated that originally all the salt which now exists was formed by the chemical combination of sodium and chlorine, previously existing in a state of vapour, and have inferred from recent experiments with chlorine, that this combination could not have taken place until the temperature, and pressure, had fallen to a certain point. But I have not reproduced chemical action in later times inasmuch as the question under discussion referred to the origin of rock salt, as a geological formation, in which it is evident chemical action could not have been directly concerned. Nevertheless, lest it should be objected to this paper that one existing source of salt formation has been entirely overlooked, I will here glance at the natural chemical formation of common salt, merely premising that it is a local and comparatively insignificant process.

Common salt occurs here and there, at rare intervals, on the earth's surface, as an efflorescence; or, in brine exuding from the base of mountain formations, in no way related to rock salt; in situations, in fact, in which no common salt was to be expected on any theory previously referred to in this paper. Such deposits are said to exist largely in Chili, and their formation has been studied by M. Pissis, who has drawn up a report on the subject for the Chilian Government. At the base of the Shevaroy Hills, in the centre of the South Indian peninsula, a salt spring or salt lick, used

by cattle, exists, whose presence can only be accounted for by chemical action. The whole district is a mass of hornblende, quartz and felspar, shot with trap. Mr. Bruce Foote, of the Geological Survey of India, accounts for this salt by chemical action. I am not sure that the Chilian salt is not after all marine, but I will give here the substance of M. Pissis' report on the subject. He states that the salt is associated with large quantities of potassic nitrate, which is not found in marine formations, and there is an entire absence of stratified rocks, which are found associated with ordinary rock salt. The salt deposits are on the surface of the hill plateau (the Cordillera of Maricunga) at various elevations up to 13,200 feet, but not in the valley beneath. Marine shells are quite absent from this deposit. He argues that the salt must have some independent local origin. Besides sodic chloride and potassic nitrate, calcic sulphate and sodic sulphate are, however, largely present.

For the manufacture of the above salts in nature's laboratory, sodium and calcium-nitrate, chlorhydric and sulphuric acids, are required. The surrounding rocks are felspathic and the soil is a felspathic detritus. The felspaths are composed of albite, labrodite, and oligoklase. Labrodite contains a large quantity of lime; albite from 8 to 10 per cent of soda; oligoklase contains both potash and soda—here are the bases. The same rocks furnish some of the required acids. They contain pyrites, which may yield sulphuric acid on oxidation, and trachytes, which furnish chlorine and chlorides. The atmosphere yields nitric acid. The experiments of Chlöes prove that nitric acid is formed by the action of alkaline carbonates in the presence of oxidizable matter. Now, M. Pissis believes that all the decompositions and recompositions required, resulting in the ultimate formation of the salts actually found, are constantly going on, and are sufficient to account for the existing salt and other deposits.

The deposits referred to are found as follows: on the surface, sand, clay, porphyritic and quartzite stones; next, a firmer layer of conglomerated gypsum and salt; next, sulphites mixed with potassic nitrate, sodic chloride, sodic iodide, potassic sulphate and sodic sulphate; lower still, pure sodic chloride and clay, resting on porphyry and granite. Whatever the mode of origin of these salts, it is at least curious that they should be, with the exception of potassic nitrate, a salt easily formed in nature just such as characterise marine deposits. I am willing to attribute the Shevaroy salt lick to chemical action, seeing that it appears to be a very limited source of salt; but in the presence of large deposits of gypsum, common and other marine salts, apparently in a stratified condition, I would prefer to suspend judgment. The question is unsettled and requires an attitude of reserve.

JAS. J. L. RATTON.

NOTE.

It is important that I should explain fully the data from which I have calculated the amount of salt in the ocean.

First, as regards the percentage of salt in the sea. The specific gravity of the sea has been shown by careful weighments to vary from 1·0246 at the poles to 1·028 in the Southern Ocean.

I have, with a view to making a liberal allowance for the comparatively fresh water about the poles and in the Black Sea, Caspian, and Sea of Azof—in case the two latter should be included in Krummel's calculation—adopted an average specific gravity for the entire ocean of 1·024, or a little less than that found by Dr. Moss near the pole during the Arctic Expedition of 1875-76.

Taking the average specific gravity at 1·024, I next find the percentage of salt as follows: The specific gravity of the Channel is 1·027. It contains 3·522 per cent. by weight soluble salts. Sodic chloride forms 2·706 parts of the 3·522, or 76 per cent. I take this 76 per cent. as being the normal or average percentage of sodic chloride to total contained salts throughout the sea, although I am aware that the proportion between sulphates and chlorides is disturbed about the north pole. Next, to find the total salts in the ocean having a mean specific gravity of 1·024, I make a sum of proportion with the specific gravity of the Channel and its known salts, and the specific gravity of the sea—27 : 24 : : 3·522—and find that the total salts amount to 3·130 per cent., of which common salt forms 2·378 at 76 per cent. of 3·130. I think that so far there is no exaggeration.

Next, to make use of Krummel's cubic miles, we must have the quantity of salt in a cubic measure of our sea water having the specific gravity 1·024. It so happens that a cubic foot of distilled water weighs at 60° F. 1,000 ounces. At the same temperature and pressure a cubic foot of the sea water, specific gravity 1·024, would weigh 1,024 ounces. As we have seen that it contains 2·378 per cent. by weight of salt, we may calculate on 24·350 ounces of salt to the cubic foot of sea. Here I drop the decimal ·350 of an ounce to the cubic foot, as a further check on exaggeration. Dr. Warth states that a cubic foot of Mayo mine rock salt weighs 93 lb. or 1,488 ounces. It would, therefore, require about 62 cubic feet of this sea to yield a cubic foot of rock salt.

There are 147,197,952,000 cubic feet in a cubic mile. A cubic mile of the sea water would therefore yield 2,574,160,516 cubic feet of rock salt. If we multiply this by the number of cubic miles in the ocean and divide the resultant by the number of cubic feet in a mile, we get the number of cubic miles of rock salt in the sea. Krummel's researches show that the volume of the entire sea is 3,138,000 cubic miles. The number of marine surveys which have been made of late years would enable this calculation to be made with some approach to accuracy.

$$\frac{2{,}374{,}160{,}516 \times 3{,}138{,}000}{147{,}197{,}952{,}000} = 50{,}612.$$

We thus get 50,612 cubic miles of rock salt in the sea at the present time.

Before passing on to make a rough estimate of the amount of salt which has been removed from the sea by solid rock salt formations, it is as well to notice Herschel's estimate of the weight of the ocean. Herschel calculated that the entire sea contained 2,494,500 billions of tons of sea water.

At 23·78, or for the sake of round numbers 24 per mille, of sodic chloride, by weight, this would yield 24,000,000 tons per billion. Multiply this by the number of billions and divide by the number of tons in a cubic mile of solid rock salt, viz., 6,111,339,079, at 93 lb. to the cubic foot, we get—

$$\frac{24{,}000{,}000 \times 2{,}494{,}500}{6{,}111{,}339{,}079} = 9{,}797 \text{ cubic miles of rock salt.}$$

It will be seen that these two estimates are widely different, the last being less than one-fifth of the first. I mention it, however, merely as a matter of curiosity, as Krummel's recent researches are undoubtedly entitled to most weight.

Of the other calculation, regarding the amount of rock salt which has been separated from the sea, there is, after all, very little to disclose. I start with Dr. Warth's estimate of 10 cubic miles of salt in the Cis-Indus salt range. The area of the range is 670 square miles and the average depth of the salt deposit is about 200 feet. It varies according to Mr. Wynn from 100 to 275 feet. If the salt lay 200 feet thick all over this area, the cubical contents would be 26 cubic miles. The salt occupies more than one-third of the whole area. The area of the Trans-Indus salt range is 1,000 square miles. Mr. Wynn calculates that one-fifth of this region or 200 square miles is taken up with salt. The depth of the deposit varies, but it reaches in some places 1,200 feet: say that it averages 500, and we get a cubical contents of 20 cubic miles of rock salt. The Carpathian salt region occupies an area of 50,000 square miles. The salt, to judge by the map, which shows salt mines at wide intervals, would occupy about one-fifteenth of this area, or 3,333 square miles. Its depth in some places is very great, over 1,200 feet; it may be assumed to average 600 feet in thickness; this would give us 416 cubic miles of rock salt. The English salt-bearing region occupies about 450 square miles. Taking one-third of it as salt deposit, with an average

thickness of 100 feet, we get about 3 cubic miles of salt. There remain the Spanish, Irish, French, Swiss, North American, Bolivian, Peruvian, Mexican, African, Chinese, Burman, and Asiatic Russian, the cubical contents of which I have no means of estimating, but, judging from analogy and general report, I cannot be far wrong in giving them each one or two cubic miles of salt, as they are local and comparatively insignificant beds, say at the outside 41 cubic miles for all. We thus get 500 cubic miles of rock salt, arranged as follows:—

Deposits.	Cubic miles.
Cis-Indus	10
Trans-Indus	20
Carpathian	416
English	3
All others	41

Doubling this for the sake of all undiscovered rock salt deposits in the earth, whether above or below the bed of the sea, we get a total of 1,000 cubic miles of rock salt. My own impression is that this calculation errs very much on the side of excess; that there is much less than 1,000 cubic miles of rock salt formation extant. Nevertheless, I leave it so, as it the better helps to prove my proposition, that the sea has not appreciably altered in salinity, since it was first formed, down to the present time, for, as before stated, the addition of 1,000 cubic miles of rock salt to the sea, would be inappreciable to animal or plant life.

J. J. L. R.

VII.

ON THE WEAPONS, ARMY ORGANISATION AND POLITICAL MAXIMS OF THE ANCIENT HINDUS, WITH SPECIAL REFERENCE TO GUNPOWDER AND FIREARMS.

CHAPTER I.

ON THE WEAPONS AND WAR IMPLEMENTS OF THE ANCIENT HINDUS.

Our knowledge of the history of the ancient Hindus is very limited, and there is not much hope of our becoming better informed, as the most important factor for providing such knowledge, *i.e.*, a historical literature or a sufficient number of authentic records is not existing in India, in fact seems never to have existed. While we possess ample material to reconstruct to some extent the history of the ancient Egyptians, Assyrians, Hebrews, Persians or Greeks, the Hindus have left us no sufficiently trustworthy records of the past, to enable us to do the same with respect to Indian history, that has been done to the history of other ancient nations.

The combined influences of climate, geographical position, political circumstances, education, religious belief, and habit have conspired to destroy any taste for historical researches, even if such had existed formerly. Internecine wars, all the more cruelly conducted, as they severed the links of previous relationship and friendship, either undertaken for the sake of

political or religious supremacy, and continual invasions of foreigners unsettling entirely all domestic affairs and civic arrangements could not excite so great an interest as to be remembered with care and committed to posterity by recording them. Nobody likes to remember saddening occurrences, and a few bright spots excepted, the political history of India reveals one of the most dismal pictures of human existence.

Moreover the exalted position in the social ladder which a Brahman occupies in his own estimation, does not induce him to interest himself in the worldly fate of others. Every Brahman regards himself as a descendant of one of the great divine sages, and obtains, if pious, final beatitude through this descent. To ensure it he has to remember and to revere the memory of his three immediate predecessors—father, grandfather, and great-grandfather; and, as every previous ancestor has observed the same practice, he is in his mind certain of his ultimate prosperity. Why should he, therefore, engage himself in the investigation of a subject in which he is not interested and which can confer on him no benefit?

The subject of Indian history is a very difficult one, not only from the absence of trustworthy ancient records, but also from the necessity—and in this respect it resembles all Asiatic history—that the historian should be an Orientalist. Historical science is strictly allied to, and dependent on, philological science, and without a knowledge of the mother tongue of a nation, or, at all events of the languages in which the original and most important sources of its history are recorded, no person is competent to undertake to write the history of a nation, for, being unable to read the original records himself, first, he is not able to judge them critically; and, secondly, it is beyond his power to detect any mistakes made by translators. Were all reports true and all translations correct, the drudgery and anxiety of a historian would be

considerably reduced, but reports and translations which fulfil these requirements are still a *desideratum.*[1]

The two great epics and the purāṇas are the works which mainly represent the historical branch of Indian literature. But woe betide him who would look up to them as authentic and trustworthy sources. However important and interesting in many other respects, historical accuracy is not a quality they aim at; for they are rather a depository of legendary myths, which are enlarged by an imagination morbidly fond of wonders. Nevertheless they must not be quite thrown away as useless, for they may contain here and there some grains of historical truth, as a rock may contain some dispersed grains of gold, though they can with difficulty only be separated from their less precious surroundings. Besides the epics and purāṇas, the law books make sometimes occasional remarks which throw light on historical subjects; they together with the works on polity allow us merely an insight into the manners and customs of the old Hindus; and in this respect they are of the highest importance. In the following pages we shall discuss the customs of the ancient Indians so far as they bear on the nature of their arms. Two ancient Sanskrit works, the Nītiprakāśikā of Vaiśampāyana and the Śukranīti of Uśanas or Śukrācārya, are in my possession which contain important, and up to the present generally unknown information on this subject, which I hope will be of interest to the reader.

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[1] Yet in this time of literary upholstery people desirous of gaining literary success often overlook these facts so evident to all outsiders. A sad example of labor thus thrown away and of much patient research so fruitlessly spent, is the voluminous history of the Mongols, in the preface of the first volume of which the author, Mr. Henry H. Howorth, says that he approaches 'the problem as an ethnologist and historian and not as a linguist,' and that he had 'no access to the authorities in their original language, and only to translations and commentaries.' This confession, however honest, need not have been made, as the work itself throughout suggests by its defects the want of linguistic attainments which for a writer on oriental history is a *conditio sine quâ non.*

The Nītiprakāśikā is an extract from a larger work devoted to the Nītiśāstra,[2] which is ascribed to Vaiśampāyana, the same to whom the Yajurveda is assigned, and who recited the contents of the Mahābhārata to Janamejaya, the great-grandson of Arjuna, the son of Pāṇḍu. Vaiśampāyana is introduced in the Nītiprakāśikā as communicating at Takṣaśilā in the Panjab to the same king Janamejaya the nature of the Dhanurveda, the peculiarity of the weapons and of all the matter connected with war and the administration of the kingdom. The Nītiprakāśikā is divided into eight books, the first five speak about the Dhanurveda and weapons in general, the sixth and seventh contain remarks on the divisions and constitution of an army, and the eighth on different subjects connected with the royal prerogative and the duties of subjects.

Horace Hayman Wilson, the eminent Sanskrit scholar, has devoted a special article to "the art of war as known to the Hindus;" but this excellent essay was written many years ago and does not enter deeply into the question of gunpowder and firearms, which is particularly commented upon in the following lines.

The smallest unit of the Indian army, a *patti*, is described to consist of 1 chariot, 1 elephant, 3 horses, and 5 men. The *Senāmukha*, *Gulma*, *Gaṇa*, *Vāhinī*, *Pṛtanā*, *Camū*, and *Anīkinī* are respectively three times as big as the corps preceding them, and the 9th formation, which was called *Akṣauhiṇī* and was considered to represent a complete army, was ten times as numerous as the preceding Anīkinī.[3] The Nītiprakāśikā, after describing the original patti, goes on to say that a chariot has a retinue of 10 elephants, 100 horses, and 1,000 men;

[2] I hope soon to obtain a copy of this work, as it is in the library of one of my native friends. It is perhaps the work alluded to in the following words contained in the Āśvalāyana Gṛhya: "Sumantu-Jaimini-Vaiśampāyana-Paila-sūtrabhāshya-bhārata-mahābhārata-dharmācāryāḥ."

[3] Amarakośa, II, viii, 48 and 49; Nītiprakāśikā, vii, 5. "Eko ratho gajaścaiko narāḥ pañca hayāḥ trayaḥ."

an elephant one of 100 horses and 1,000 men; a horse one of 1,000 soldiers, and that a foot soldier had ten followers.[4]

According to the first mentioned scale the different corps would have the following strength :—

Army Corps.	Chariot.	Elephant.	Horse.	Foot.
Patti	1	1	3	5
Senāmukha	3	3	9	15
Gulma	9	9	27	45
Gaṇa	27	27	81	135
Vāhinī	81	81	243	405
Pṛtanā	243	243	729	1,215
Camū	729	729	2,187	3,645
Anīkinī	2,187	2,187	6,561	10,935
Akṣauhiṇī	21,870	21,870	65,610	109,350

According to the second estimate one chariot alone demands an extraordinary number of supporters. And indeed the Nītiprakāśikā lays down that the various army corps should have the following constitution[5] :—

Army Corps.	Chariot.	Elephant.	Horse.	Foot.
Patti	1	10	1,000	100,000
Senāmukha	3	30	3,000	300,000
Gulma	9	90	9,000	900,000
Gaṇa	27	270	27,000	2,700,000
Vāhinī	81	810	81,000	8,100,000
Pṛtanā	243	2,430	243,000	24,300,000
Camū	729	7,290	729,000	72,900,000
Anīkinī	2,187	21,870	2,187,000	218,700,000
Akṣauhiṇī	21,870	218,700	21,870,000	2,187,000,000

[4] Nītiprakāśikā vii, 6–8.

6. Nāgā daśa rathasyāsya śatam aśvāssahānugāḥ
sahasram tu narāḥ proktāḥ parivārā nṛpājñayā.

7. Ekasyaikasya nāgasya śatam aśvāḥ prayāyinaḥ
padātayaḥ sahasram tu pratyaṅgeśvanuyāyinaḥ.

8. Ekasyaikasya cāśvasya sahasram tu padātayaḥ
daśa caitān pattīn yuṅktvā kārtsnena gaṇanā tviyam.

[5] Nītiprakāśikā, vii, 9–11, 27–30.

9. Eko ratho daśa gajāḥ sahasram cātra vājinaḥ
lakṣasaṅkhyā narāḥ pattāvevam agre'pi yojanā.

The Hindu delights in large numbers, and to this propensity must be ascribed this exorbitant calculation. The population of the whole earth is generally assumed to amount to 1,075,000,000 souls, and in the Nītiprakāśikā we are told that a complete army requires a number of men, which surpasses by more than a half the number of all the inhabitants of this globe.

The Śukranīti gives a much more sensible distribution. According to that work the aggregate of the military unit would be 5 chariots, 10 elephants, 40 camels, 64 bulls, 320 horses, and 1,280 men.[6]

The formation of an army into different columns is a subject to which great attention was paid. Four different kinds of such columns or *vyūhas* are enumerated—the *Daṇḍa*, *Bhoga*, *Asaṁhata*, and *Maṇḍala*; the first had 17 varieties, the second 5, the third 6, and the fourth 2. Besides these, five most important columns were not enrolled in any of these four sets; they were called *Varāha*, *Makara*, *Garuḍa*, *Krauñca*, and *Padma*.[7]

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10. Pratyaṅgaistriguṇaiḥ sarvaiḥ kramāt ākhyā yathottaram
anīkinīm daśaguṇām āhurakṣauhiṇīm budhāḥ.
11. Senāmukhe tu guṇitāḥ trayaścaiva rathā gajāḥ
triṁśaṭ trilakṣapadatāḥ trisahasram hi vājinaḥ; &c., &c.
27. Akṣauhiṇyām tvekaviṁśatsahasrāṇi janādhipa
tathā cāṣṭaśatam caiva saptatim rathagām viduḥ.
28. Aṣṭādaśasahasrāṇi dve lakṣe ca nareśvara
tathā saptaśatam caiva gajānām gaṇanā tviyam.
29. Dve koṭī caiva lakṣāṇām aṣṭādaśa mahīpate
tathā saptatisahasrā gandharvāśśīghrayāyinaḥ.
30. Dve cārbude ca koṭiścāpyaṣṭādaśasamīritāḥ
lakṣāṇām saptatiścaiva padātīnām itīyatī.

[6] *See* Śukranīti, Chapter V, ślokas 20, 21.

[7] *See* Nītiprakāśikā, vi, 3–9.

3. Daṇḍo bhogo'saṁhataśca maṇḍalavyūha eva ca
vyūhāścatvāra evaite teṣu bhedān bravīmyaham.
4. Pradaro dṛḍhakassatyaścāpabhūsvakṣireva ca
supratiṣṭho'pratiṣṭhaśca śyeno vijayasañjayau.

All these troops were commanded by generals, whose rank depended upon the number of troops under their orders. The ministers of the king held mostly also the office of generals.

All the soldiers, from the private to the commander-in-chief, received their pay regularly every month. The crown-prince, who was generally the next in command to the king, received every month 5,000 *varvas*, or gold coins ;[8] the commander-in-chief drew 4,000 varvas; the atiratha, the first charioteer, who was usually a royal prince, received 3,000 varvas ; the mahāratha 2,000 varvas; the rathika and the gajayodhi, 1,000 varvas each; the ardharatha 500 varvas; the ekaratha (commander of a chariot), and the leader of an elephant got each 300 niṣkas. The general commanding all the cavalry obtained 3,000 niṣkas; the general in command of the whole infantry received 2,000 niṣkas. An officer commanding 1,000 men of infantry got 500 niṣkas ; an officer who led the same number of troopers received 1,000 niṣkas;

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5. Viśālovijayaḥ sūcī sthūṇo karṇaścamūmukhaḥ
mukhāsyovijayaśceti daṇḍasaptadaśātmakaḥ.
6. Gomūtrikā haṁsikā ca sañcārī śakaṭastathā
evam karapatantīti bhogabhedāstu pañca vai.
7. Ardhacandrakaṭaddhāro vajraśśakaṭakastathā
śṛṅgī ca kākapādīca godhiketyaparasmṛtaḥ.
8. Asaṁhataḥ ṣaḍvidhassyāt ityāhurvyūhakovidāḥ
sarvabhadro durjayaśca maṇḍalopi dvidhā iti.
9. Vārāhī makaravyūho gāruḍaḥ krauñca eva ca
padmādyāścaṅgavaikalyāt etebhyaste pṛthak smṛtāḥ.

[8] The value of the varva, which is an ancient coin, is difficult to determine. In the Nītiprakāśikā, VI, 89–101, the rewards which are to be given to soldiers who kill a king, a crown-prince, a commander-in-chief, a leader of an Akṣauhiṇī, a councillor, and a minister, &c., &c., are also fixed in varvas.

89. Dadyāt prahṛṣṭo niyutam varvāṇām rājaghātine
tadardhantatsutavadhe senāpativadhe tathā.
90. Akṣauhiṇīpativadhe tadardham paricakṣate
mantryamātyavadhe caiva tadardham tu pradāpayet, &c., &c.

Śloka 89 is also found in the Kāmandakīya, XIX, 18, having been most probably taken from this work of Vaiśampāyana.

an officer who had 100 small pattis under his command and who must ride on a horse drew only 7 varvas, while a private got 5 suvarṇas.

The following fourteen persons got only each 15 varvas a month :—1, an elephant driver ; 2, a charioteer ; 3, an ensign-bearer ; 4, a superintendent of wheels ; 5, an officer in command of 300 men of infantry ; 6, a camel-express ; 7, a messenger ; 8, the head gate-keeper ; 9, the chief-bard ; 10, the chief-singer ; 11, the chief panegyrist ; 12, the head store-keeper ; 13, the army paymaster, and 14, the muster master.[9] The Śukranīti contains another scale of salaries.[10] If this scale of salaries is correct and if the salaries were really paid, one would feel inclined to think, that an extensive gold currency existed in ancient India.

Armour was worn by the warriors, and even elephants and horses were similarly protected.

The description of the weapons which follows in this chapter is mainly taken from the Nītiprakāśikā.

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[9] *See* Nītiprakāśikā, VII, 33–42.

33. Yuvarājāya varvāṇām pañcasāhasrakī bhṛtiḥ
sarvasenāpraṇetre ca catussāhasrakī ca sā.
34. Bhṛtiścātirathe deyā varvāṇām trisahasrakam
mahārathāya sahasradvayam rājñādhimāsakam.
35. Vetanam rathikāyātha sāhasram gajayodhine
dadyāt ardharathāyātha vetanam śatapañcakam.
36. Ekasmai rathikāyātha tādṛśe gajasādine
niṣkāṇām triśatam dadyāt yatastau tatkuṭumbinau.
37. Sarvāśvādhipatī rājñastrisahasram sa cārhati
pādātādhipatiścāpi dvisahasrasya bhājanam.
38. Pādātānām sahasrasya netre pañcaśatam smṛtam
tathā cāśvasahasreśe sahasram vetanam bhavet.
39. Śatapattyadhipe sapta varvāṇām hayayāyine
padātaye suvarṇānām pañcakam vetanam bhavet.
40. Gajayantussarathesca dhvajine cakrapāya ca
padātitriśateśāya pathikoṣṭracarāya ca.
41. Vārttikādhipateścāpi vetriṇām pataye tathā
sūtamāgadhavandīnām pataye vīvadhādhipe.
42. Senāyā bhṛtidhātre ca bhaṭānām gaṇanāpare
māsi māsi tu varvāṇām daśapañca ca vetanam.

[10] *See* Śukranīti, Chapter V, śl. 23–28.

The Hindu is fond of connecting everything, even the most material substance, with some metaphysical cause. We must not be surprised, therefore, if weapons and arms do not make an exception to this rule.

A supernatural origin is ascribed to all armour. The primeval Dakṣa had two daughters—Jayā and Suprabhā—who were given in marriage to Kṛśāśva, the mind-begotten son of Brahma. Jayā became, according to a promise of Brahma, the mother of all weapons and missiles, while her sister Suprabhā brought forth at first ten sons who were called Saṁhāras *restraining spells;* and afterwards through the special favor of Brahma an eleventh son, Sarvamocana (releaser of all), was born.[11]

The knowledge of everything connected with weapons and arms is confined to the Dhanurveda, *i.e.*, the knowledge of the bow, and he only, who is well acquainted with this Veda, can hope to conquer his foes. The Dhanurveda is one of the four Upavedas. Even the gods had originally no intimate acquaintance with the precepts of the Dhanurveda, and this deficiency was one of the causes why they were at one time totally defeated by the demons or asuras. Eventually the gods were instructed in the mysteries of the Dhanurveda; and this Veda was communicated to Pṛthu by Brahma himself.

The Dhanurveda when personified is credited with possessing four feet, eight arms, and three eyes, and Sāṅkhyāyana is mentioned as the head of his Gotra or race. In his four arms on the right he holds a thunderbolt (*vajra*),

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[11] *See* Nītiprakāśikā, 1, 45–47; II, 38.

45. Kṛśāśvo mānasaḥ putro dve jāye tasya sammate
jayā ca suprabhā caiva dakṣakanye mahāmatī.

46. Jayā labdhavarā matto (*a*) śastrāṇyastrāṇyasūta vai
paścāt daśa parā cāpi tāvat putrān ajījanat.

47. Saṁhārān nāmadurdharṣān durākrāmān balīyasaḥ
mantradaivatasaṁyogāt śāstrāṇyastratvam āpnuvan.

38. Sarvamocananāmā tu suprabhātanayo mahān
muktāmuktākhilaśamo madvarāt (*a*) prathitaḥ paraḥ.

(*a*) Brahma speaks here himself.

a sword (*khaḍga*), a bow (*dhanu*), and a discus (*cakra*) ; in his four arms on the left are a hundred-killer (*śataghnī*), a club (*gadā*), a spear (*śūla*), and a battle axe (*paṭṭiśa*). His crest is provided with charms; his body is polity; his armour is a spell; his heart represents withdrawing spells; his two earrings are the weapons and missiles; his ornaments are the various war movements ; his eyes are yellow; he is girt with the garland of victory, and he rides on a bull.[12]

The spell which effects the destruction of one's enemies and which grants victory is as follows: *Om namo bhagavate dham dhanurvedāya mām rakṣa rakṣa mama śatrūn bhakṣaya bhakṣaya hum paṭ svā hā* ; *i.e.*, "Om salutation to the dham dhanurveda, protect, protect me, devour, devour my enemies hum paṭ svā hā." If these 32 syllables are 32,000 times repeated the supplication will be successful.[13]

The arms are divided, according to their nature, into *mukta* or those which are thrown, *amukta* or those which are not thrown, *muktāmukta* or those which are either thrown or not thrown, and into *mantramukta* or those which are thrown by

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[12] *See* Nītiprakāśikā, II, 1–4.

1. Catuṣpācca dhanurvedo raktavarṇaścaturmukhaḥ
   aṣṭabāhustrinetraśca sāṅkhyāyanasagotravān.
2. Vajram khaḍgo dhanuścakram dakṣabāhucatuṣṭaye
   śataghnīca gadāśūlapaṭṭiśā vāmabāhuṣu.
3. Prayogakoṭīrayuto nītyaṅgo mantrakañcukaḥ
   upasaṁhārahṛdayaśśastrāstrabhayakuṇḍalaḥ.
4. Anekavalgitākārabhūṣaṇaḥ piṅgalekṣaṇaḥ
   jayamālāparivṛto vṛṣārūḍassa ucyate.

[13] *See* Ibidem, II, 5-9.

5. Etammantram pravakṣyāmi vairijālanikṛntanam
   ātmasainyasvapakṣāṇām ātmanaścābhirakṣakam.
6. Ādau praṇavam uccārya na ma ityakṣare tataḥ
   vateti bhagapūrvam dham dhanurvedāya coccaret.
7. Mām rakṣa rakṣetyuccārya mama śatrūn atho vadet
   bhakṣayeti dviruccārya hum paṭ svā hetyathoccaret.
8. Aham evam ṛṣiścāsya gāyatrī chanda ucyate
   maheśvaro devatāsya viniyogo'rinigrahe.
9. Dvātriṁśadvarṇakamanum varṇasaṅkhyāsahasrakaiḥ
   japitvā siddhim āpnoti ripūñścāpyadhitiṣṭhati.

The expression *dham dhanurveda* is formed in the same way as *Ram Rāma*, *Vim Vijñeśvara*, &c.

spells.[14] This classification is more theoretical than practical, as it is not strictly followed. The gods can, moreover through the application of spells, turn all weapons into projectiles.[15]

The Agnipurāṇa arranges the weapons in five classes, into 1, those thrown by machines, *yantramukta;* 2, those thrown by the hand, *pāṇimukta ;* 3, those thrown and drawn back, *muktasandhārita ;* 4, those which are not thrown, *amukta ;* and, 5, the weapons which the body provides for the personal struggle, the *bāhuyuddha.*[16] Other classifications besides these exist, but the difference between them is not essential.

Twelve projectiles and projectile weapons constitute the division of the *mukta* or thrown weapons.

1. The *dhanu* (bow) is personified as a being which has a broad neck, a small face, a slender waist, and a strong back. He is four cubits in height, and bent in three places. He has a long tongue, and his mouth has terrible tusks ; his color is that of blood, and he makes always a gurgling noise. He is covered with garlands of entrails, and licks continually with his tongue the two corners of his mouth.[17]

According to the rules laid down in the Dhanurveda the bow should be bent by the left hand, the bowstring should be taken by the right hand, and the arrow be placed on the

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[14] *See* Ibidem, II, 11–13.

11. Muktam caivā hyamuktam ca muktāmuktam ataḥ param
mantramuktam ca catvāri dhanurvedapadāni vai.
12. Muktam bāṇādi vijñeyam khaḍgādikam amuktakam
sōpasaṁhāram astram tu muktāmuktam udāharet.
13. Upasaṁhārarahitam mantram uktam ihocyate
caturbhirebhiḥ pādaistu dhanurvedaḥ prakāśate.

[15] *See* Ibidem I. 47 b, note 11.

[16] *See* Agnipurāṇa (Dhanurveda) 148, 2.
Yantramuktam pāṇimuktam muktasandhāritam tathā
amuktam bāhuyuddham ca pañcadhā tat prakīrttitam.

[17] *See* Nītiprakāśikā, II, 17 ; and IV. 8, 9.

8. Pṛthugrīvam sūkṣmaśiraḥ tanumadhyam supṛṣṭhavat
catuṣkiṣkuprāṁśudeham triṇatam dīrghajihvakam.
9. Daṁṣṭrākarālavadanam raktābham ghargharasvanam
āntramālāparikṣiptam lelihānam ca sṛkvaṇī.

thumb and between the fingers of the bowhand on the back of the bow.[18]

The length of the bow, and consequently also of the arrow, varies. Two strings are generally fixed to a bow, and the archer wears on his left arm a leather protection against the bowstring, and a quiver on his back. Those well skilled in archery distinguish fourteen different movements which can be made when using the bow. In the Agnipurāṇa the bow is declared to be the best weapon.

In the law book of Manu we read, that one bowman placed on a wall can fight a hundred men, and that a hundred archers can fight ten thousand; therefore a fort is recommended. In the Śukranīti occurs the same verse but instead of the word for bow *dhanu* that for a missile *astra* is given, which imparts a wider meaning to the sentence, especially if it is taken to allude to firearms, unless *dhanu* itself stands for missile in general.[19]

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[18] Ibidem, II, 17; and IV, 11–14.

11. Dhanurvedavidhānena nāmya vāmakareṇa tat
dakṣiṇena jyayā yojya pṛṣṭhe madhye pragṛhya tat.
12. Vāmāṅguṣṭham tadudare pṛṣṭhe tu caturaṅgulīḥ
puṅkhamadhye jyayā yojya svāṅgulīvivareṇa tu.
13. Ākarṇam tu samākṛṣya dṛṣṭim lakṣye viveśya ca
lakṣyāt anyad apaśyanstu kṛtapuṅkhaḥ prayogavit.
14. Yadā muñcet śaram vidhye kṛtahastastadocyate
evam bāṇāḥ prayoktavyāḥ hyātmārakṣyaḥ prayatnataḥ.

[19] *See* Nītiprakāśikā, II, 17, and IV, 18–20.

18 Lakṣyasya pratisandhānam ākarṣaṇavikarṣaṇe
paryākarṣānukarṣauca maṇḍalīkaraṇam tathā.
19 Pūraṇam sthāraṇam caiva dhūnanam bhrāmaṇam tathā
āsannadūrapātauca pṛṣṭhamadhyamapātane.
20 Etāni valgitānyāhuścaturdaśadhanurvidaḥ.

Compare Śukranīti, Chapter V, śl. 152; Agnipurāṇa, 148, 6–37; 149, 1–19.

See Manu, VII, 74, (Hitopadeśa, III, 50 Pañcatantra, I, 252).

74. Ekaḥ śatam yodhayati prākārastho dhānurdharaḥ.
śatam daśa sahasrāṇi tasmāt durgam viśiṣyate.

and compare these verses with Śukranīti, IV, VI, 10.

10. Ekaḥ śatam yodhayati durgastho'stradharo yadī
śatam daśasahasrāṇi tasmāt durgam samāśrayet.

2. The *iṣu* (arrow) has a dark large body; is three cubits long, an añjali (*i.e.*, the hollow of the two hands) in circumference and goes very far; two movements are ascribed to the arrow.[20]

3. The *bhiṇḍivāla* or *bhiṇḍipāla* (crooked club) has a crooked body; its head, which is bent and broad, is a cubit long, and it is a hand in circumference. It is first whirled thrice and then thrown against the foot of the enemy. When throwing the bhiṇḍivāla, the left foot should be placed in front.[21]

4. The *śakti* (spear) is represented as being two cubits long, with a steady sideway movement. It has a sharp tongue, a horrible claw, and makes a sound like a bell. It has an open mouth, is very dark, and is colored with the blood of the enemy. It is covered with garlands of entrails; has the mouth of a lion, and is fearful to look at. It is as broad as a fist and goes very far. It must be taken up and thrown with two hands. Its movements are of six kinds.[22]

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[20] *See* Ibidem, I, 17; and IV, 28, 29.

28. Iṣurnīlabṛhaddeho dvihastotsedhasaṁyutaḥ
paridhyā cāñjalimito'nalpamātragatistu saḥ.

29. Bhrāmaṇam kṣepaṇam ceti dve gatī sthūlasannate.

Compare Śukranīti, Chapter V, śl. 152.

[21] *See* Ibidem, I, 17, and IV, 30, 31.

30. Bhiṇḍivālastu vakrāṅgo namraśīrṣo bṛhacchirāḥ
hastamātrotsedhayuktaḥ karasammitamaṇḍalaḥ

31. Tribhrāmaṇam visargaśca vāmapādapurassaran
pādaghātāt ripuhaṇo dhāryaḥ pādātamaṇḍalaiḥ.

Compare Agnipurāṇa, 151, 15.

[22] *See* Ibidem, I, 17, and IV, 32–35.

32. Śaktirhastadvayotsedhā tiryaggatiranākulā
tīkṣṇajihvogranakharā ghaṇṭānādabhayaṅkarī.

33. Vyāditāsyātinīlāca śatruśoṇitarañjitā
āntramālāparikṣiptā siṁhāsyā ghoradarśanā.

34. Bṛhatsarurdūragamā parvatendravidāriṇī
bhujadvayapreraṇīyā yuddhe jayavidhāyinī.

35. Tolanam bhrāmaṇam caiva valganam nāmanam tathā
mocanam bhedanam ceti ṣaṇmārgāśśāktisaṁśritāḥ.

5. The *drughaṇa* (hatchet) has an iron body, a crooked neck, and a broad head. It is 50 aṅgulas long and a fist in circumference. Four movements are peculiar to it.[23]

6. The *tomara* (tomahawk) has a wooden body and a metal head formed like a bunch of flowers. It is three cubits long, has a red color, and is not crooked. It is moved in three ways.[24]

7. The *nalikā* (musket) has a straight body, is thin-limbed, and hollow in the middle. It pierces the vital parts, is dark, and discharges the missiles of the Droṇicāpa. When it is to be used, it is taken up, ignited, and pierces the mark. These are the three actions connected with the nalikā.

It seems to have been a small-sized gun, a sort of carbine, as it is only described as effective against enemies standing near.[25]

8. The *laguḍa* (club) is described as having a small foot, a broad shoulder, and a broad head. The foot part is surrounded with metal. It is small and very broad. It has the

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[23] Ibidem, II. 17; IV. 36, 37.

36. Drughaṇastvāyassāṅgassyāt vakragrīvo bṛhacchirāḥ
pañcāśat aṅgulyutsedho muṣṭisammitamaṇḍalaḥ.

37. Unnāmanam prapātam ca sphoṭanam dāraṇam tathā
catvāryetāni drughaṇe valgitāni śritāni vai.

[24] Ibidem, II. 17; IV. 38, 39.

38. Tomaraḥ kāṣṭhakāyassyāt lohaśīrṣaḥ sugucchavān
hastatrayonnatāṅgaśca raktavarṇastvavakragaḥ.

39. Uddhānam vinivṛttiśca vedhanam ceti tattrikam
valgitam śastratattvajñāḥ kathayanti narādhipāḥ.

Compare Agnipurāṇa, 151, 10.

[25] Ibidem, II. 17; IV. 40, 41.

40. Nalikā ṛjudehā syāt tanvaṅgī madhyarandhrikā
marmacchedakarī nīlā droṇicāpaśarerinī.

41. Grahaṇam dhmāpanam caiva syūtam ceti gatitrayam
tām āśritam viditvā tu jetāsannān ripūn yudhi.

Mallinātha uses the expression *droṇicāpa* in his commentary to Naiṣadha, II, 28. *Compare* p. 234.

shape of a tooth. It has a hard body and is two cubits high. Its movements are of four kinds.[26]

9. The *pāśa* (lasso) is composed of very small scales, made of metal. It has a triangular form, is one span in circumference, and is ornamented with leaden balls. It has three peculiar movements of its own. According to the Agnipurāṇa it is 10 cubits long, round, and the noose is a hand in circumference. It is not regarded as a noble weapon.[27]

10. The *cakra* (discus) has the form of a circular disk with a quadrangular hole in its midst. Its color is like that of indigo water and its circumference amounts to two spans or 10 cubits according to the Śukranīti. Five or seven motions are connected with the discus practice. It is most probably identical with the quoit still in use in some Sikh regiments and also among the troops of Native Indian princes.[28]

11. The *dantakaṇṭaka* (tooth-thorn) is a thorn made of metal, is broad at the front, has a thin tail, and its color resembles charcoal. It is an arm high, has a good handle, is straight in

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[26] *See* Ibidem, II. 17 ; IV. 42, 43.

42. Laguḍassūkṣmapādassyāt pṛthvaṁśaḥ sthūlaśīrṣakaḥ
lohabaddhāgrabhāgaśca hrasvadehassupīvaraḥ.

43. Dantakāyo dṛḍhāṅgaśca tathā hastadvayonnataḥ
utthānam patanam caiva peṣaṇam pothanam tathā.

Compare Agnipurāṇa, 151, 15.

[27] *See* Ibidem, II. 17 ; IV. 45, 46.

45. Pāśassusūkṣmāvayavo lohadhātustrikoṇavān
prādeśaparidhissīsagulikābharaṇāñcitaḥ.

46. Prasāraṇam veṣṭanam ca kartanam ceti te trayaḥ
yogāḥ pāśāśritā loke pāśāḥ kṣudrasamāśritāḥ.

Compare Agnipurāṇa, 150, 2–6 ; 151, 6, 7.

[28] *See* Ibidem II. 17 ; IV. 47, 48.

47. Cakram tu kuṇḍalākāram ante svaśrasamanvitam
nīlisalilavarṇam tat prādeśadvayamaṇḍalam.

48. Granthanam bhrāmaṇam caiva kṣepaṇam parikartanam
dalanam ceti pañcaiva gatayaścakrasaṁśritāḥ.

Compare Śukranīti, Chapter V, śl. 156 ; Agnipurāṇa, 151, 8.

its body, and looks frightful. Two movements are required for using it.[29]

12. The *musuṇḍi* (octagonheaded club) has broad knots, a broad body, and a good handle for the fist. It is three arms long, and has the fearful color of a cobra. Its two principal movements are the jerking and the whirling.[30]

B. The class of the *amukta* weapons includes twenty different species.

1. The *vajra* (thunderbolt) was, according to tradition, made out of the backbone of the sage Dadhīci. It keeps its mythical character throughout. Nothing can withstand its splendour, and it was originally made for the destruction of the demon Vṛtra. It shines brightly with the light of a krore of suns, and it resembles the fire which shone at the dissolution of the world. Its fangs extend to a yojana (10 miles) in length, and its tongue too is most horrible. It resembles the night of destruction at the end of the world, and is covered with 100 knots. Its breadth amounts to five yojanas and its length to 10 yojanas. Its periphery is covered with sharp points ; in color it resembles lightning ; a broad strong handle is fixed to it. Its movements are four in number.[31]

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[29] *See* Ibidem, II. 17 ; IV. 49, 50.

49. Dantakaṇṭakanāmā tu lohakaṇṭakadehavān
agre pṛthussūkṣmapucchaścāṅgārasanibhākṛtiḥ.

50. Bāhūnnatassutsaruśca daṇḍakāyo'gralocanaḥ
pātanam granthanam ceti dve gatī dantakaṇṭake.

[30] *See* Ibidem II. 18 ; IV. 51, 52.

51. Musuṇḍī tu bṛhadgranthirbṛhaddehassusatsaruḥ
bāhutrayasamutsedhaḥ kṛṣṇasarpogravarṇavān.

52. Yāpanam ghūrṇanam ceti dve gatī tat samāśrite.

Another form of the word is bṛsuṇḍī.

[31] *See* Ibidem, II. 19 ; V. 1–6.

1. Amuktaprathamam vajram vakṣyāmi tava tacchṛṇu
aprameyabalam vajram kāmarūpadharam ca tat.

2. Dadhīcipṛṣṭhāsthijanyam sarvatejaḥ praśāmakam
vṛtrāsuranipātārtham daivatejopavṛṁhitam.

2. The *īlī* (hand-sword) is two cubits long, has no hilt for the protection of the hand, and is black colored. The front part of the blade is curved, and it is five fingers broad. Four movements are peculiar to it.[32]

3. The *paraśu* (axe) is a thin stick with a broad mouth. Its face is in front, curved like a half moon, the body is dirty colored, but the face is shining. At the foot end is the handle, and it has a head. Its height is the length of an arm. Its qualities are felling and splitting.[33]

4. The *gośīrṣa* (cow-horn spear) is two feet long; it is wooden in the lower parts and iron on the upper part. It has a blade, is of dark metal color, is three-cornered and has a good handle. Its height amounts to 16 thumbs; it is sharp in front and broad in the middle. Indra presented the gośīrṣa together with a seal to Manu, and the cow-horn spear and the signet-ring became henceforth the emblems of royalty. The gośīrṣa is handled with four movements.[34]

5. The *asidhenu* (stiletto) is one cubit long, has no hand-guard at the handle, is dark colored, has three edges, is two

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3. Koṭisūryapratīkāśam pralayānalasannibham
yojanotsedhadaṁṣṭrābhirjihvayā cātighorayā.
4. Kālarātrinikāśam tat śataparvasamāvṛtam
pañcayojanavistāram unnatam daśayojanam.
5. Apimaṇḍalasaṁvītam paritaḥ tīkṣṇakoṭimat
taṭidgauram ca pṛthunā tsaruṇā ca virājitam.
6. Cālanam dhūnanam caiva chedanam bhedanam tathā
valgitāni ca catvāri sadā vajram śritāni vai.
Compare Agnipurāṇa, 151, 16.

[32] Ibidem, II. 19; V. 7, 8.
7. Īlī hastadvayotsedhā karatrarahitatsaruḥ
śyāmā bhugnāgraphalakā pañcāṅgulisuvistṛtā.
8. Sampātam samudīrṇam ca nigrahapragrahau tathā
īlīm etāni catvāri valgitāni śritāni vai.

[33] Ibidem, II. 19; V. 9, 10.
9. Paraśussūkṣmayaṣṭissyāt viśālāsyaḥ puromukhaḥ
ardhacandrāgre koṭistu malināṅgassphuranmukhaḥ.
10. Tsarupādassaśikharo bāhumātronnatākṛtiḥ
pātanam chedanam ceti guṇau paraśum āśritau.
Compare Agnipurāṇa, 151, 13.

[34] Ibidem, II. 19; V. 11–14.
11. Gośīrṣam gośiraḥ prakhyam prasāritapadadvayam
adhastāt dāruyantrādyam ūrdhvāyaḥphalakāñcitam.

thumbs broad, and is applicable for fighting at near quarters. It is fastened with a waistbelt and is called the sister of the sword. It requires three movements. It is worn by kings.[35]

6. The *lavitra* (scythe) has a crooked shape, is broad at the back and sharp in front. It is black colored, five thumbs broad and one cubit and a half high. It is provided with a broad handle and is able to cut buffaloes into pieces. It is lifted with both arms and thrown.[36]

7. The *āstara* (scatterer, bumarang) has a knot at the foot, a long head and is a hand broad. Its middle part is bent to the extent of a cubit, it is sharp, black colored and two cubits long. Whirling, pulling, and breaking are its three actions, and it is a good weapon for charioteers and foot soldiers.[37]

The general belief is that the bumarang is a weapon peculiar to the Australians; but this is by no means the case. It is well known in many parts of India, especially in its Southern Peninsula. The Tamulian Maravar and Kallar employ it when hunting and throw it after deer. In the

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12. Nīlalohitavarṇam tat triraśrica susatsaru
ṣoḍaṣāṅgulyunnatam ca tīkṣnāgram pṛthumadhyakam.
13. Satkṛtya manave dattam mahendreṇa samudrikam
prabhutvasūcake loke rājñām gośīrṣamudrike.
14. Muṣṭigrahaḥ parikṣepaḥ paridhiḥ parikuntanam
catvāryetāni gośīrṣe valgitāni pracakṣate.

[35] *See* Ibidem, II. 19; V. 15–17.

15. Asidhenusamākhyātā hastaunnatyapramāṇataḥ
atalatratsaruyutā śyāmā koṭitrayāśritā.
16. Aṅgulidvayavistīrṇā hyāsannaripughātinī
mekhalāgranthinī sā tu projyate khaḍgaputrikā.
17. Muṣṭyagragrahaṇam caiva pāṭanam kuntanam tathā
valgitatrayavatyeṣā sadā dhāryā nṛpottamaiḥ.

[36] *See* Ibidem, II. 19; V. 18, 19.

18. Lavitram bhugnakāyam syāt pṛṣṭhe guru puraśśitam
śyāmam pañcāṅgulivyāmam sārdhahastasamunnatam.
19. Tsaruṇā guruṇā naddham mahiṣādinikartanam
bāhudvayodyamakṣepau lavitre valgite mate.

[37] *See* Ibidem, II. 19; V. 20, 21.

20. Āstaro granthipādassyāt dīrghamaulirbṛhatkaraḥ
bhugnahastodaraśśitaḥ śyāmavarṇo dvihastakaḥ.
21. Bhrāmaṇam karṣaṇam caiva troṭanam tat trivalgitam
jñātvā śatrūn raṇe hanyāt dhāryassādipadātikaiḥ.

Madras Government Museum are shown three bumarangs, two ivory ones, which came from the armoury of the late Rāja of Tanjore, and a common wooden one, which hails from Pudukoṭa. The wood of which the bumarang is made is very dark. I possess four black wooden and one iron bumarang, which I have received from Pudukoṭa. In the arsenal of the Pudukoṭa Rāja is always kept a stock of these sticks. Their name in Tamil is *valai taḍi* (வளை தடி) bent stick, as the stick is bent and flat. When thrown a whirling motion is imparted to the weapon which causes it to return to the place from which it was thrown. The natives are well acquainted with this peculiar fact. The length of the *āstara* or bumarang is not always exactly the same, the difference amounts often to more than one cubit.

8. The *kunta* (lance) has an iron body, a sharp top, and six edges. It is six or ten cubits high, and is round at the foot end. It is handled in six ways.[38]

9. The *sthūṇa* (anvil) has a red body and many knots standing near to each other; it is as high as a man, and straight. It is whirled and fells the enemy to the ground.[39]

10. The *prāsa* (spear) is seven cubits long and made of bamboo, which is colored red. It has a head made of metal, and is sharp at the foot end; it is adorned with silken tufts. Four movements are prescribed for it. In the Śukranīti it resembles a broad sword.[40]

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[38] *See* Ibidem, II. 19; V. 22, 23.

22. Kuntastvayomayāṅgassyāt tīkṣṇaśṛṅgaḥ ṣaḍaśṛmān
pañcahastasamutsedho vṛttapādo bhayaṅkaraḥ.

23. Uddīnam avadīnam ca niḍīnam bhūmilīnakam
tiryaglīnam nikhātam ca ṣaḍmārgāḥ kuntam āśritāḥ

Compare Śukranīti, Chapter V, śl. 155.

[39] *See* Ibidem, II. 20; V. 24.

24. Sthūṇastu raktadehassyāt samīpadṛḍhaparvakaḥ
pumpramāṇa ṛjustasmin bhramaṇam pātanam dvayam.

[40] *See* Ibidem, II. 20; V. 25, 26.

25. Prāsastu saptahastassyāt aunnatyena tu vaiṇavaḥ
lohaśīrṣastīkṣṇapādaḥ kauśeyastabakāñcitaḥ.

11. The *pināka* or *triśūla* (trident) has three heads, is sharp in front, made of brass, has an iron head, and measures four cubits. It has a tuft made of the hair of a bear, and its neck is ornamented with brass armlets. It is shaken and impales the enemy.[41]

12. The *gadā* (club) is made of sharp iron, has 100 spikes at its broad head, and is covered on the sides with spikes. It is a formidable weapon, four cubits long, and its body equals a carriage axle in measure. The head is adorned with a crest; it is covered with a golden belt, and is able to crush elephants and mountains. Twenty different motions are ascribed to the gadā.[42] By means of gunpowder it is thrown out of projectile weapons of various forms.[43]

13. The *mudgara* (hammer) is small at the foot end, has no face, and is three cubits long. Its color resembles

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26. Ākarṣaśca vikarṣaśca dhūnanam vedhanam tathā
catasra etā gatayo raktaprāsam samāśritāḥ.

Compare Śukranīti, Chapter V, śl. 155.

[41] *See* Ibidem, II. 20; V. 27, 28.

27. Pinākastu triśīrṣassyāt śitāgraḥ krūralocanaḥ
kāṁsyakāyo lohaśīrṣaścaturhastapramāṇavān.

28. Ṛkṣaromastabakako jhallivalayagrīvavān
dhūnanam mroṭanam ceti triśūlam dve śrite gatī.

Compare Śukranīti, Chapter V, śl. 156, and Agnipurāṇa, 151, 9.

[42] *See* Ibidem, II. 20; V. 29–34.

29. Gadā śaikyāyasamayī śatārapṛthuśīrṣakā
śaṅkuprāvaraṇā ghorā caturhastasamunnatā.

30. Rathākṣamātrakāyā ca kirīṭāñcitamastakā
suvarṇamekhalā guptā gajaparvatabhedinī.

31. Maṇḍalāni vicitrāṇi gatapratyāgatāni ca
astrayantrāṇi citrāṇi sthānāni vividhāni ca.

32. Parimokṣam praharaṇam varjanam paridhāvanam
abhidravaṇam ākṣepam avasthānam savigraham.

33. Parāvṛttam sannivṛttam avaplutam upaplutam
dakṣiṇam maṇḍalam caiva savyam maṇḍalam eva ca.

34. Aviddham ca praviddham ca sphoṭanam jvālanam tathā
upanyastam apanyastam gadā margāśca viṁśatiḥ.

Compare Agnipurāṇa, 151, 12.

[43] The word Astrayantrāṇi (*see* v. 31-b) is explained in the old commentary accompanying the Nītiprakāśikā as "astravatagnyādinirmāṇaprayuktapreraṇāni."

honey, its shoulder is broad, and it weighs eight loads.[44] It has a good handle, is round, black colored, and is a hand in circumference. It is whirled around and fells things to the ground.[45]

14. The *sīra* (ploughshare) is doubly curved, has no head, but an iron-plated front, and crushes the objects with which it comes into contact. It equals a man in height, is of agreeable color, and by means of much dragging it causes persons and things to fall to the ground.[46]

15. The *musala* (pestle) has neither eyes nor head, neither hands nor feet. It is well joined together at both ends and fells and crushes enemies.[47]

16. The *paṭṭiśa* (battle axe) is of a man's height, has two sharp blades and a sharp top. Its handle has a protection for the hand. The paṭṭiśa is generally called the uterine brother of the sword.[48]

17. The *mauṣṭika* (fist-sword, dagger) has a good hilt, is a span long and ornamented. Its end is sharp, it has a high neck, is broad in the midst and dark colored. It can make

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[44] A load or *bhāra* is generally estimated to be equal to 20 tulas = 2,000 palas of gold, or between 140—150 pounds.

[45] *See* Ibidem, II. 20; V. 35, 36.

35. Mudgarassūkṣmapādassyāt hīnaśīrṣastrihastavān
madhuvarṇaḥ pṛthuskandhaścāṣṭabhāraguruśca saḥ.

36. Satsarurvartulo nīlo paridhyā karasammitaḥ
bhrāmaṇam pātanam ceti dvividham mudgareśritam.

Compare Agnipurāṇa, 151, 14.

[46] *See* Ibidem, II. 20; V. 37.

37. Sīro dvivakro viśikho lohapaṭṭamukhaḥ kṛṣan
pumpramāṇaḥ snigdhavarṇaḥ svākarṣavinipātavān.

[47] *See* Ibidem, II. 20; V. 38.

38. Musalastvakṣiśīrṣābhyām karaiḥ pādairvivarjitaḥ
mūle cāntetisambandhaḥ pātanam prothanam dvayam.

[48] *See* Ibidem, II. 20; V. 39.

39. Paṭṭiśaḥ pumpramāṇassyāt dvidhārastīkṣṇasṛṅgakaḥ
hastatrāṇasamāyuktamuṣṭiḥ khaḍgasahodaraḥ.

Compare Śukranīti, Chapter V, śl. 153, and Agnipurāṇa, 151, 16.

all sorts of movements, as it is a small and very handy weapon. Its qualities are enlarged upon by Vaiśampāyana.[49]

18. The *parigha* (battering ram) is of a round shape, as big as a palmyra-tree, and of good wood. Experts know, that a whole troop is required to make it move and strike.[50]

19. The *mayūkhī* (pole) is a staff, has a hilt, and is of the height of a man. It is covered with bells, exhibits various colors, and is provided with a shield as a friend. It is used for striking, for warding off a blow, for killing, for discharging and for attacking.[51]

20. The *śataghnī* (hundred-killer) is provided with thorns, is of black iron, and hard. It looks like a mudgara, is four cubits long, round and provided with a handle. According to Vaiśampāyana it resembles in all its movements the gadā, it was therefore like the gadā shot out of other projectile weapons. According to others it is itself a projectile weapon, a great cannon. The name states only its destructiveness, and leaves its nature doubtful; but if it was hurled out of

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[49] *See* Ibidem, II. 20; V. 40–44.

40. Mauṣṭikaṁ satsarurjñeyam prādeśonnati bhūṣitam
śitāgram unnatagrīvam pṛthūdaram sitam tathā.
41. Maṇḍalāni vicitrāṇi sthānāni vividhāni ca
gomūtrakāni citrāṇi gatapratyāgatāni ca.
42. Tiraścīnagatānyeva tathā vakragatāni ca
parimokṣam praharaṇam varjanam paridhāvanam.
43. Abhidravaṇam āplāvam adhassthānam savigraham
parāvṛttam apāvṛttam apadrutam apaplutam.
44. Upanyastam apanyastam āghātam sthalanam tathā
ētāni valgitānyāhurmauṣṭike nṛpasattama.

Compare Śukranīti, Chapter V, śl. 153.

[50] *See* Ibidem, II. 20; V. 45.

45. Parigho vartulākārastālamātrasutāravaḥ
balaikasādhyasampātaḥ tasmin jñeyo vicakṣaṇaiḥ.

[51] *See* Ibidem, II. 20; V. 46, 47.

46. Mayūkhī kṛtayaṣṭissyāt muṣṭiyuktā naronnatā
kiṅkiṇīsaṁvṛtā citrā phalikā sahacāriṇī.
47. Āghātam ca pratīghātam vighātam parimocanam
abhidravaṇam ityete mayūkhīm pañca saṁśritāḥ.

enormous tubes by means of gunpowder, it must have been a very formidable projectile.[52]

These twenty weapons, belonging to the amukta division, are deposited in the second foot of the Dhanurveda.

All these thirty-two weapons were, according to tradition, taken from the body of the sage Dadhīci. And this is the way how it happened :—

When the gods had been defeated by the demons in a great battle, which defeat they owed in some part to their insufficient knowledge of the Dhanurveda, they perceived on their flight the great sage Dadhīci, who was sitting near the place they passed. To him they entrusted their arms and continued their flight until they reached the high mountain Mandara, under whose bulky body they sought and obtained an asylum. Here they rested for many years, acknowledging Indra as their immediate superior. The sage meanwhile guarded well these weapons, which through his penance had all been changed into spikes, had entered his body and had become his bones. Thus a long time passed away, until the gods became at last anxious to recover once more their lost position and to try another fight with the demons. In their dejection they appeared before Brahma, the father of all beings, and requested him to help them. Brahma, moved to pity, imparted to them the Dhanurveda, together with the spells and all the necessary implements belonging to it. Supplied with the Dhanurveda, his four feet and his six aṅgas, the gods went in search of Dadhīci and requested him to surrender to them their weapons. Dadhīci was quite willing to do so, even though this kindness should cost him his life, provided he were allowed to ascend to the divine heaven.

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[52] *See* Ibidem, II. 20 ; V. 48, 49.

48. Śataghnī kaṇṭakayutā kālāyasamayī dṛḍhā
mudgarābhā caturhastā vartulā tsaruṇā yutā.

49. Gadā valgitavatyeṣā mayeti kathitā tava.

His request was granted, and Dadhīci advised the gods to let a cow lick his body until the bones which represented their arms were laid free. This was done. Out of the thirty-one bones of Dadhīci's body arose thirty-one weapons, and his backbone, the thirty-second bone, was transformed into the thirty-second weapon, Indra's thunderbolt.[53] Provided with these weapons, which had assumed the shape of the bones from which they originated, the gods went to encounter the demons again, who could not withstand this time the assault of the gods.

But the mouth of the cow, as it had been guilty of the great sin of Brahman-murder, became henceforth an object of abhorrence to the pious; and up to this day orthodox Brahmans when meeting a cow, try to avoid looking at its head, and endeavour to let their eyes fall previously on the hinder part of its body.[54]

One of the most important weapons, the *khaḍga* or *asi*, *i.e.*, the sword, is not included in these two lists, because being created separately and specially by Brahma, it was regarded as a superior weapon altogether.

The high estimation in which the khaḍga was held by Vaiśampāyana is not apparent in the Agnipurāṇa, where it is classed as a rather inferior weapon. Tradition says that it was given to Indra to be used against the Asuras. According to its nature the khaḍga belongs to the second or *amukta* class.[55]

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[53] *See* Ibidem II. 43–60 ; Mahābhārata, V, 8695 ; IX, 2949, &c.

[54] *See* Ibidem, II. 54, 55.

54. Gomukham brahmahatyāpi viveśa nṛpasattama
devasantoṣaṇāt lokān śāśvatān śa ṛṣiryayau.

55. Tadāprabhṛti lokā vai na paśyantīha gomukham
prātaḥ puruṣaśārdula taddoṣagatamānasāḥ.

[55] *See* Agnipurāṇa, 148, v. 5 and 8.

5. Khaḍgādikam amuktam ca niyuddhaṃ vigatāyudham.

8. Tāni khaḍgajaghanyāni bāhupratyavarāṇi ca.

The story goes, that when the gods were battling against the demons, there appeared through Brahma's agency on the top of the Himālaya mountain the deity of the sword, the *Asidevatā*, illuminating by its splendour the whole sky, the earth at the same time was shaking to its very foundation. The *khaḍga* was thus introduced into the world by Brahma for the sake of freeing the universe from the mighty demons. It was 50 thumbs long and 4 broad, and Brahma entrusted it to Śiva or Rudra. After success had attended the undertaking of Śiva, he delivered the sword to Viṣṇu, who on his side handed it over again to Marīci and the other sages. One of the latter, the sage Ṛṣabha, gave it to Indra. Indra conferred it on the guardians of the quarters of the world, and these latter presented it to Manu, the son of the Sun, to help him in the administration of justice against evil-doers. Since that time it has remained in the family of Manu. The constellation of the khaḍga is the Kṛttikā, its deity Agni, the head of its gotra Rohiṇī, and its supreme deity is Rudra. Besides Nistriṁśā it has the eight following different names: *Asi*, *Viśamana*, *Khaḍga*, *Tīkṣṇadharma*, *Durāsada*, *Śrīgarbha*, *Vijaya* and *Dharmamūla*. It is handled in thirty-two different ways, and carried on the left side.

The third species of weapons, the *Muktāmukta*, those which may be thrown and not thrown are divided into two classes, into the Sopasaṁhāra or those which are connected with the withdrawing or restraining Upasaṁhāra and into the Upasaṁhāra themselves, which are the restrainers of the previous class.[56]

Of the former there are 44 varieties, and of the latter 54.

Ibidem, 149, 7, 8; 150, 1–5; Compare Śukranīti, Chapter V, śl. 154, 155; and Nītiprakāśikā III, 1–40. The third book of the Nītiprakāśikā is entirely devoted to the khaḍga. Compare ibidem also, II. 12a.

12a. Muktam bāṇādi vijñeyam khaḍgādikam amuktakam.

[56] The Sopasaṁhāra and Upasaṁhāra weapons are almost identical with the lists of arms presented by Viśvāmitra to Rāma as we read in the Bālakāṇḍa (in Schlegel's edition, cantos 29 and 30; in the old Calcutta edition,

The 44 Sopasaṁhāra weapons are the following:—

1. The *daṇḍacakra* (discus of punishment).
2. The *dharmacakra* (the discus of right).
3. The *kālacakra* (the discus of Yama).
4. The *aindracakra* (the discus of Indra).
5. The *śūlavara* (the spear of Śiva).
6. The *brahmaśīrṣa* (the head of Brahma).

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canto 26). The latter edition contains more names than Schlegel's. The enumeration contained in Vaiśampāyana's Nītiprakāśikā is independent of that of the Rāmāyaṇa, and for that very reason it is peculiarly interesting. It is therefore here given in the original; Nītiprakāśikā, II. 22–37.

22. Daṇḍacakram dharmacakram kālacakram tathaiva ca
aindracakram śūlavaram brahmaśīrṣam ca modakī.
23. Śikharī dharmapāśam ca tathā varuṇapāśakam
painākāstram ca vāyavyam śuṣkārdre, śikharāstrakam.
24. Krauñcāstram hayaśīrṣam ca divyādivye'strasañjñike
gāndharvāstram nandanāstram varṣaṇam śoṣaṇam tathā.
25. Prasvāpanapraśamane santāpanavilāpane
mathanam mānavāstram ca sāmanam tāmasam tathā.
26. Saṁvartam mausalam satyam sauram māyāstram eva ca
tvāṣṭram astram ca somāstram saṁhāram mānasam tathā.
27. Nāgāstram gāruḍāstram ca śaileṣīkeśtrasañjñike
catuścatvāri caitāni sopasaṁhārakāṇi vai.
28. Vakṣyāmi copasaṁhārān kramaprāptān nibodhame
yān jñātvā vairimuktāni cāstrāṇi śamayiṣyasi (*Pṛthu*).
29. Satyavān satyakīrtiśca rabhaso dhṛṣṭa eva ca
pratihārataraścaivāpyavāṅmukhaparāṅmukhau.
30. Dṛḍhanābho' lakṣyalakṣyāvāvilaśca sunābhakaḥ
daśākṣaśśatavaktraśca daśaśīrṣaśatodarau.
31. Dharmanābho mahānābho dundunābhastu nābhakaḥ
jyotiṣavimalau caiva nairāśyakarśanāvubhau.
32. Yogandharaḥ sanidraśca daityaḥ pramathanastathā
sārcirmālī dhṛtirmālī vṛttimān rucirastathā.
33. Pitryassaumanasaścaiva vidhūtamakarau tathā
karavīro dhanaratī dhānyam vai kāmarūpakaḥ.
34. Jṛmbakāvaraṇam caiva mohaḥ kāmarucistathā.
varuṇaḥ sarvadamanaḥ sandhānaḥ sarpanāthakaḥ.
35. Kaṅkālāstram mausalāstram kāpālāstram ca kaṅkaṇam
paiśācāstram ceti pañcāpyasurāstrāṇi bhūpate.
36. Satyavān sarvadamanaḥ kāmarūpastathaiva ca
yogandharopyalakṣyaścāpyasurāstravighātakāḥ.
37. Catuścatvāriṁśat ete pañcānyonyavimardanāḥ
melayitvā ca pañcāśat ekonāhyastraśāmakāḥ.
38. Sarvamocananāmā tu suprabhātanayo mahān
muktāmuktākhilaśamo madvarāt prathitaḥ paraḥ.

7. The *modakī* (the charmer).
8. The *śikharī* (the pointed).
9. The *dharmapāśa* (the noose of right).
10. The *varuṇapāśa* (the noose of Varuṇa).
11. The *paīnākāstra* (the missile of Śiva).
12. The *vāyavya* (the missile of Vāyu).
13. The *śuṣka* (the dry).
14. The *ārdra* (the wet).
15. The *śikharāstra* (the flaming missile).
16. The *krauñcāstra* (the Krauñca missile).
17. The *hayaśīrṣa* (the horse-headed missile).
18. The *vidyāstra* (the missile of knowledge).
19. The *avidyāstra* (the missile of ignorance).
20. The *gandharvāstra* (the gandharva missile).
21. The *nandanāstra* (the joy-producing missile).
22. The *varṣaṇa* (the rainy missile).
23. The *śoṣaṇa* (the drying missile).
24. The *prasvāpana* (the sleep-causing missile).
25. The *praśamana* (the soothing missile).
26. The *santāpana* (the tormenting missile).
27. The *vilāpana* (the wailing missile).
28. The *mathana* (the churning missile).
29. The *mānavāstra* (the missile of Manu).
30. The *sāmana* (the conciliatory missile).
31. The *tāmasa* (the missile of darkness).
32. The *saṁvarta* (the rolling missile).
33. The *mausala* (the club-shaped missile).
34. The *satya* (the missile of truth).
35. The *saura* (the missile of the sun).
36. The *māyāstra* (the missile of illusion).
37. The *tvāṣṭra* (the missile of Viśvakarma).
38. The *somāstra* (the missile of the moon).
39. The *saṁhāra* (the missile of restraining).
40. The *mānasa* (the spiritual missile).
41. The *nāgāstra* (the missile of the serpent).
42. The *garuḍāstra* (the missile of Garuḍa).

43. The *śailāstra* (the rocky missile).
44. The *iṣīkāstra* (the reed-missile).

The 55 Upasaṁhāra weapons are as follows :—

1. The *satyavān* (the true).
2. The *satyakīrti* (the truly-famed).
3. The *rabhasa* (the impetuous).
4. The *dhṛṣṭa* (the bold).
5. The *pratihāra* (the warding off).
6. The *avāṅmukha* (the downfaced).
7. The *parāṅmukha* (the averted face).
8. The *dṛḍhanābha* (the weapon with firm navel).
9. The *alakṣya* (the imperceptible).
10. The *lakṣya* (the perceptible).
11. The *āvila* (the turbid).
12. The *sunābhaka* (the weapon with good navel).
13. The *daśākṣa* (the ten-eyed).
14. The *śatavaktra* (the hundred-mouthed).
15. The *daśaśīrṣa* (the ten-headed).
16. The *śatodara* (the hundred-bellied).
17. The *dharmanābha* (the weapon with the navel of right).
18. The *mahānābha* (the big-navelled).
19. The *dundunābha* (the drum-navelled).
20. The *nābhaka* (the navelled).
21. The *jyotiṣa* (the luminous).
22. The *vimala* (the stainless).
23. The *nairāśya* (the discourager).
24. The *karśaṇa* (the emaciating).
25. The *yogandhara* (the united).
26. The *sanidra* (the sleeping).
27. The *daitya* (the fiendish).
28. The *pramathana* (the churner).
29. The *sārcirmālā* (the garland of energy).
30. The *dhṛti* (the supporting).
31. The *mālī* (the necklaced).
32. The *vṛttima* (the abiding).

33. The *rucira* (the glittering).
34. The *pitrya* (the paternal).
35. The *saumanasa* (the good-minded).
36. The *vidhūta* (the vibrating).
37. The *makara* (the monster).
38. The *karavīra* (the scymitar).
39. The *dhanarati* (the desire of wealth).
40. The *dhānya* (the grain).
41. The *kāmarūpaka* (the shape-assumer).
42. The *jṛmbaka* (the gaper).
43. The *āvaraṇa* (the protecting).
44. The *moha* (the fascinating),
45. The *kāmaruci* (following one's own wishes).
46. The *vāruṇa* (the missile of Varuṇa).
47. The *sarvadamana* (the all-subduer).
48. The *sandhāna* (the aimer).
49. The *sarpanāthaka* (the missile belonging to the god of serpents).
50. The *kaṅkālāstra* (the skeleton missile).
51. The *mausalāstra* (the pestle missile).
52. The *kāpālāstra* (the skull missile).
53. The *kaṅkaṇa* (the bracelet weapon).
54. The *paiśācāstra* (the infernal missile).

The Sopasaṁhāra weapons are contained in the 29th Sarga of Schlegel's edition of the Bālakāṇḍa, while the Upasaṁhāra weapons are mentioned mostly in the 30th canto.

The last five weapons are peculiar to the demons, while five other weapons are on the other hand most effective against these demons and cause their destruction; they are found under the numbers 1, 9, 25, 41, and 47.

These 44 Sopasaṁhāra and 54 Upasaṁhāra weapons represent the Muktāmukta class, and they are deposited in the third foot of the Dhanurveda. They represent the belief so widely spread in India that the knowledge of certain spells endowed their owner with supernatural power, of which power these mysterious weapons are the outward token. To a person not within the pale of Brahmanism they appear like

mere creations of a fervid imagination. On the other hand the Indians do not stand alone in this belief in supernatural weapons, though it has been reserved to them only to define and to classify them methodically.

The last and most potent division, or the Mantramukta, is only represented by six weapons, but then they are so powerful that nothing can frustrate or subdue them. Their names are—

1. *Viṣṇucakra* (the discus of Viṣṇu).
2. *Vajrāstra* (the thunderbolt).
3. *Brahmāstra* (the missile of Brahma).
4. *Kālapāśaka* (the noose of death).
5. *Nārāyaṇāstra* (the missile of Nārāyaṇa).
6. *Pāśupatāstra* (the missile of Paśupati).

These six weapons, which are projected by spells, reside in his fourth foot.[57]

When Vaiśampāyana has finished in his second chapter the enumeration of the weapons, which he assigns to the four different classes, and has given in the following three chapters an accurate description of the sword and all the thirty-two arms belonging to the two first divisions, he remarks that the efficiency of the weapons varies and is subject to great changes. In different ages and at different places the quality of a weapon is not the same, for the mode of construction and the material out of which it is made is of a different kind. Moreover much depends on the strength and the ability of the person who uses such arms in increasing, preserving or diminishing their efficiency.[58]

In addition to these weapons others were in actual use, but they are said to be specially peculiar to the lowest or

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[57] *See* Nītiprakāśikā, II. 40.

40. Viṣṇucakram vajram astram brahmāstram kālapāśakam
nārāyaṇam pāśupatam nāśāmyam itarāstrakaiḥ.

[58] *See* Nītiprakāśikā, V. 51:

51. Etāni vikṛtim yānti yugaparyāyato nṛpa
dehadārḍhyānusāreṇa tathā buddhyanusārataḥ.

fourth age, the Kaliyuga, in which we live. Though these four ages or *yugas* are nowhere mentioned in the ancient Vedic literature, and though the constitution of the great or *Mahāyuga* is most probably an invention of a comparatively later period—perhaps after the commencement of the Kaliyuga had been connected with a certain date and the other yugas had been reckoned backwards from that date—it is a most singular phenomenon that many otherwise enlightened Brahmans really believe that they possess records from these previous three yugas.

The assumption of the depravity of the existing Kaliyuga and the superiority of the preceding ages is consoling to the feeling of those who no longer occupy the same exalted position as formerly, and who try to insinuate that the cause of the loss of their prestige is neither due to their own faults nor to the superiority of their rulers, but to the decrees of fate, to which every one is subject. We can here dispense with the presumption that the arms of any particular yuga are good or bad in the same proportion as the yuga itself is good or bad, the more so as a good and really auspicious age, from its intrinsic goodness, does not require any weapons to protect it ; as in such a happy era righteousness and prosperity prevail everywhere.

But even in the Kaliyuga humanity is not so debased that no voice is raised against the use of cruel and barbarous weapons. On the other hand wherever and whenever arms are used, the object of their use must have been to apply force, either for offensive or defensive purposes. Remembering this fact one need not wonder that but little humanity is as a rule displayed in restraining the efficiency of weapons, and though, as we shall see, the ancient Hindu law books objected strongly to the use of certain arms, it is doubtful whether this prohibition was in reality ever enforced, for there exists a difference between uttering sentiments creditable to humanity and enforcing them in practice.

On the other hand we meet occasionally precepts which certainly do not exhibit a great amount of human kindness. Thus we read in the Pañcatantra: "By a wise man should an enemy be killed, even if he be his son-in-law; if no other means be possible, he who murders commits no sin. A soldier who goes to the battle does not think about right and wrong; Dhṛṣṭadyumna was in olden times murdered in his sleep by the son of Droṇa."[59]

The war machines which the ancient Indians used, whether they were made of metal or of stone, and out of which they hurled iron and lead balls at their enemies, were doubtless discharged by means of gunpowder. The existence of gunpowder is intimated by Vaiśampāyana in his description of the nalikā and by the application of smoke-balls which, according to the commentator of Vaiśampāyana, were really made of gunpowder.[60] The ancient Hindus were also, as is well known, great adepts in the art of smelting and casting metals.

The old Hindus displayed a great ingenuity in inventing injurious and irritating compounds and refined expedients for hurling them amongst the enemy during a combat.[61]

Boiling oil has been used by many nations in different parts of the globe, and the old Indians believed also in its efficacy, but they used besides explosive oil. The resin of the Śāl tree (*Shorea robusta*), which resin is also called *kalakala*, is recommended likewise. The casting of melted sugar is mentioned as well as that of heated sand. Pots filled with venomous snakes mixed together with honey, spikes and big stones, saws, smoke-balls, burning husks of corn, and other injurious preparations were frequently employed in India.

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[59] *See* Pañcatantra, I. 299, 300.

[60] Dhūmagulika is explained by Cūrṇagola, powderball.

[61] *See* Nītiprakāśikā, V. 52.

52. Yantrāṇi lohasīsānām gulikākṣepakāṇi ca
tathā copalayantrāṇi kṛtrimāṇyaparāṇi ca.

The soldiers of Duryodhana, when encamped in Kurukṣetra, had at their disposal similar implements of war.[62]

These weapons and mixtures were probably used more generally during sieges and in street-fights than in open combat. The weapons just now enumerated and many others of the same objectionable and cruel type are ascribed to the depravity of the Kaliyuga, when war is conducted in an unfair, mean, and deceitful manner. The existence of many uncivilized nations of the lowest origin contributes greatly to the degeneration of the times. Among the despicable peoples thus enumerated are found the Huns, Pulindas, Śabaras, Pahlavas, Śakas, Mālavas, Varvaras, Koṅkaṇas, Āndhras, Colas, Pāṇḍyas, Keralas, Mlecchas, Caṇḍālas, Śvapacas, Khalas, Mavellakas, Lalitthas,[63] Kirātas, and Kukkuras. To add insult to injury, and to show the low position of these nations, the Hindus said these tribes originated from the vagina of a cow.[64]

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[62] *See* Ibidem, V. 53, 54.

53. Kūṭayuddhasahāyāni bhaviṣyanti kalau nṛpa
taptatailam sarjarasam guḍalālo gravālukā.

54. Madhusāśīviṣaghaṭāḥ śīlakāni bṛhacchilāḥ
krakacā dhūmagulikāḥ tuṣāṅgārādikam tathā.

Compare, Mahābhārata, Udyogaparva, Adhyāya, 155, 5–7.

5. Sakacagrahavikṣepāḥ satailaguḍavālukāḥ
sāśīviṣaghaṭāḥ sarve sasarjarasapāṁsavaḥ.

6. Saṅghaṭaphalakāḥ sarve sāyoguḍajalopalāḥ
saśālabhindipālāśca samadūcchiṣṭamudgarāḥ.

7. Sakāṇḍadaṇḍakāḥ sarve sasīraviṣatomarāḥ.
saśūrpapiṭakāḥ sarve sadātrāṅkuśatomarāḥ.

[63] *See* Ibidem, V, 55–57.

55. Hūnāḥ pulindāḥ śabarā varvarā pahlavāḥ śakāḥ
mālavāḥ koṅkaṇā ḥyāndhrāḥ colāḥ pāṇḍyāḥ sakeralāḥ.

56. Mlecchā goyonayaścānye caṇḍālāḥ śvapacāḥ khalāḥ
māvellakā lalitthāśca kirātāḥ kukkurāḥ tathā.

57. Pāpā hyete katham dharmam vetsyanti ca viyonayaḥ
sāṅkaryadoṣaniratā bhaviṣyantyadhame yuge.

[64] Most of these names appear also in the Mahābhārata and Rāmāyaṇa. The Hindus call the modern Europeans, *Huns*, this expression most probably arose from the idea that the ancient Hunnish invaders came also from Europe. The 14th Chapter of the Harivaṁśa contains an enumeration of many barbarous nations.

CHAPTER II.

ON THE AUTHENTICITY OF THE ŚUKRANĪTI.

The reputed author of the Śukranīti—a chapter from which on the army organisation and the political maxims of the ancient Hindus we shall give further on in these pages—is Uśanas or Śukra. He is also called Maghābhava, Kavi, Kāvya, Bhārgava, Ṣoḍaśārcis, Daityaguru, and Dhiṣṇya.[65] According to some he is the son or descendent of Bhṛgu, and, therefore, he is named Bhārgava; to others he is known as Kavi or the poet, and to others also as Kāvya, the son of Kavi, a son of Bhṛgu. He is regarded as the regent of the planet Venus or Śukra; and the Śukravāra or Friday is named after him; his connection with this planet is also evident in his names Maghābhava, Ṣoḍaśārcis, and Dhiṣṇya. Moreover he is the preceptor of the Daityas or Demons and is called therefore Daityaguru. Bṛhaspati, the preceptor of the gods and the regent of the planet Jupiter, is like Śukra the author of a famous Daṇḍanīti, or a work on civil and military administration. This work of Śukra is highly praised in the Kāmandakīya, as containing the principles of all sciences, and its ślokas are very often found in the Kāmandakīya.[66]

Throughout Indian literature Śukra is always upheld as one of the greatest sages, his sayings are carefully noted and quotations from his Essence of Polity or Nītisāra are met with in the most ancient and celebrated writings.

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[65] *See* "Śukro Maghābhavaḥ Kāvya Uśanā Bhārgavaḥ Kaviḥ Ṣoḍaśārcir Daityagurur Dhiṣṇyaḥ," in Hemacandra's *Anekārtharatnamālā*, II, 33 and 34; compare Amarakoṣa, I, 1, 26; and Halāyudha's Abhidhānaratnamālā, I, 48; &c. &c.

[66] *See* Kāmandakīya, II, 4, 5.

4. Vārtā ca daṇḍanītiśca dve vidye ityavasthite
lokasyārthapradhānatvāt śiṣyāḥ surapurodhasaḥ.

5. Ekaiva daṇḍanītistu vidye tyauśanasī sthitiḥ
tasyām tu sarvavidyānām ārambhāḥ samudāhṛtāḥ.

The reason of calling Śukra's work a *Daṇḍanīti* is explained in Śukranīti, I, 157, as follows:—

Damo daṇḍa iti khyātastasmāt daṇḍo mahīpatiḥ
tasya nītirdaṇḍanītirnayanāt nītirucyate.

The author of the Śukranīti is very frequently mentioned in the Mahābhārata. In one place we read that Brahma wrote the first Daṇḍanīti which contained the enormous number of 100,000 chapters. This bulky volume was reduced by Śaṅkara or Śiva into a code called Viśālākṣa which still comprehended 10,000 chapters. Indra reduced the Viśālākṣa into the Bāhudaṇḍaka which reached the respectable number of 5,000 chapters. Indra was followed by Bṛhaspati, whose Bārhaspatya amounted to 3,000 chapters. Kāvya or Uśanas thinking that the life of man was too short to digest such enormous books limited his Nītisāra to 1,000 chapters.[67] It was thus Uśanas, who made the Daṇḍanīti accessible to men.

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[67] *See* Mahābhārata, Śāntiparva, Rājadharma, LIX, 28, 29, 76–87.

28. Tān uvāca surān sarvān Svayambhūr bhagavānstataḥ
    śreyo'ham cintayiṣyāmi vyetuvobhīḥ surarṣabhāḥ.
29. Tatodhyāyasahasrāṇām śatam cakre svabuddhijam
    yatra dharmastathaivārthaḥ kāmaścaivābhivarṇitaḥ.
76. Etat kṛtvā śubham śāstram tataḥ subhagavān prabhuḥ
    devān uvāca saṁhṛṣṭaḥ tataḥ Śakrapurogamān.
77. Upakārāya lokasya trivargasthāpanāya ca
    navanītam sarasvatyā buddhireṣa prabhāvitā.
78. Daṇḍena sahitāhyeṣā lokarakṣaṇakārikā
    nigrahānugraharatā lokān anucariṣyati.
79. Daṇḍena nīyate cedam daṇḍam nayati vā punaḥ
    daṇḍanītiriti khyātā trilokān abhivartate.
80. Ṣāḍguṇyaguṇasāraiṣā sthāsyatyagre mahātmasu
    dharmārthakāmamokṣāśca sakalā hyatra śabditāḥ.
81. Tatastān bhagavān nītim pūrvam jagrāha Śaṅkaraḥ
    bahurūpo vīśālākṣaḥ śivassthāṇurumāpatiḥ.
82. Prajānām āyuṣohrāsam vijñāya bhagavān Śivaḥ
    sañcikṣepa tataḥ śāstram mahārtham brahmaṇā kṛtam.
83. Viśālākṣam iti proktam tad idam pratyapadyata
    daśādhyāyasahasrāṇi Subrahmaṇyo mahātapāḥ.
84. Bhagavān api tacchāstram sañcikṣepa Purandaraḥ.
    sahasraiḥ pañcābhis tāta yaduktam bāhudaṇḍakam.
85. Adhyāyānām sahasraistu tribhireva Bṛhaspatiḥ
    sañcikṣepeśvaro buddhyā Bārhaspatyam yaducyate.
86. Adhyāyānām sahasreṇa Kāvyaḥ saṅkṣepam abravīt
    tacchāstram amṛtoprajño yogācāryo mahāyaśāḥ.
87. Evam lokānurodhena śāstram etanmaharṣibhiḥ
    saṅkṣiptam āyurvijñāya martyānām hrāsam eva ca

According to the *Nītiprakāśikā* Brahma, Rudra, Subrahmaṇya, Indra, Manu, Bṛhaspati, Śukra, Bhāradvāja, Gauraśiras and Vyāsa were authors of works on polity. Brahma's Daṇḍanīti contained 100,000 chapters, that of Rudra 50,000, that of Subrahmaṇya 25,000, that of Indra 12,000, that of Manu 6,000, that of Bṛhaspati 3,000, that of Śukra 1,000, that of Bhāradvāja 700, that of Gauraśiras 500, and that of Vedavyāsa 300 chapters.[68]

In the second Śloka of the Śukranīti we read that Brahma's work consisted of ten millions of double verses, which would give to each chapter an average length of 100 Ślokas.[69]

Just as the Mānavadharmaśāstra does not contain as many verses, as are said to have been originally in it, so also is the Śukranīti we actually possess by no means as long as is indicated in the Mahābhārata. In fact at the end of the 4th section the Śukranīti is declared to be only 2,200 Ślokas

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[68] *See* Nītiprakāśikā, I, 21–28.

21. Brahmā maheśvaraḥ skandaścendraprācetaso manuḥ
bṛhaspatiśca śukraśca bhāradvājo mahātapāḥ ;
22. Vedavyāsaśca bhagavān tathā gauraśirā muniḥ
ete hi rājaśāstrāṇām praṇetāraḥ parantapāḥ.
23. Lakṣādhyāyān jagau brahmā rājaśāstre mahāmatiḥ
pañcāśat ca sahasrāṇi rudraḥ saṅkṣipya cābravīt.
24. Pañcaviṁśat sahasrāṇi skandas saṅkṣipya cāvadat
daśādhyāyasahasrāṇi dvisahasre ca vāsavaḥ.
25. Prācetasamanuścāpi ṣaṭsahasrāṇyathābravīt
trīṇyadhyāyasahasrāṇi bṛhaspatiruvāca ha.
26. Kāvyastu tat samāloḍya cakre'dhyāyasahasrakam
saptādhyāyaśatam śāstram Bhāradvājastathābhaṇat.
27. Munirgauraśirāścāpi pañcādhyāyaśatam jagau
vedavyāsastu bhagavān tat saṅkṣipya mahāmatiḥ
28. Śatatrayādhyāyavatīm nītim cakre mahāmate
saṇkṣiptam āyurvijñāya martyānām buddhidoṣataḥ.

[69] *See* Śukranīti, I, 2–4.

2. Pūrvadevairyathānyāyam nītisāram uvāca tān
śatalakṣaślokamitam nītiśāstram athoktavān.
3. Svayambhūr bhagavān lokahitārtham saṅgraheṇa vai
tatsāram tu Vasiṣṭhādyairasmābhirvṛddhihetave.
4. Alpāyubhūbhṛtādyartham saṅkṣiptam tarkavistṛtam.

long, and it speaks well for the preservation of this ancient work, that though the MSS. differ as to their length in some way or other, the variations in them are not very great. One MS. contains indeed exactly 2,200 ślokas, and all MSS. I possess contain the above verse in question, which thus defines the proportions of the Śukranīti.[70]

In the beginning of the 58th Chapter of the Rājadharma the name of Kāvya occurs also as one of the authors of a Dharmaśāstra, and he is likewise mentioned as such in the second Śloka of the Pañcatantra.[71] The Kāmandakīya and other similar works allude repeatedly to our author. It is a peculiar coincidence that the reason for composing the Śukranīti is the same both in the Śukranīti and in the Mahābhārata. If the former were a later production the cause of this agreement would be evident, but there are many good grounds for the supposition that this is not the case, and that the quotations from Śukra's work on Polity found in such ancient works as the Mahābhārata, Harivaṁśa, Kāmandakīya, Pañcatantra are genuine quotations. A few examples taken at random will be sufficient for our purpose.

The Mahābhārata quotes in the 56th Chapter of the Rājadharmānuśāsana the following as the saying of Uśanas: "A law abiding king should in the exercise of his duties chastise a Brahman, who has even read the whole Veda, who

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[70] *See* Śukranīti, IV, VII. 346.
Manvādyairādṛto yorthastadartho Bhārgaveṇa vai
dvāviṁśatiśatam ślokā nītisāre prakīrtitāḥ.

[71] *See* Rājadharma, LVIII, 1–4.
1. Ete te rāja dharmāṇām navanītam Yudhiṣṭhira
Bṛhaspatirhi bhagavān nānyam dharmam praśaṁsati.
2. Viśālākṣaśca bhagavān Kāvyaścaiva mahātapāḥ
sahasrākṣo Mahendraśca tathā Prācetaso Manuḥ.
3. Bhāradvājaśca bhagavān tathā Gauraśirā muniḥ
rājaśāstrapraṇetāro brahmaṇyā brahmavādinaḥ.
4. Rakṣām eva praśaṁsanti dharmam dharmavṛtam vara.
See also Pañcatantram, I, 2.
Manave Vācaspataye Śukrāya Parāsarāya sasutāya
Cāṇakyāya ca viduṣe namo'stu nayaśastrakartṛbhyaḥ.

approaches with uplifted weapons and intent to murder. The king knowing the law should certainly protect the law which is being broken. By such an act he is no law-breaker; for fury recoils on fury." Our Śukranīti expresses this decision (IV, VII, 259) as follows: "He who has raised a weapon against an approaching assassin, even if this be a Vaidika Brahman (Bhrūṇa), and has killed him, should not be considered as a murderer of a Vaidika Brahman; if he has not killed him, he should be regarded as such." [72]

As the śloka of the Śukranīti contains a more difficult reading and the rare term Bhrūṇa in the sense of Vaidiki-brahman occurs here, which is, as it were, explained in the Mahābhārata by "Vēdāntapāraga," there seems to be no doubt which of the two versions is the earlier.[73]

The 57th chapter of the Rājadharma begins with another quotation of Uśanas. He is said to have declared that "the earth swallows these two, namely, a king who does not oppose an enemy and a Brahman who does not travel about, like a snake swallows the animals living in holes."

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[72] *See* Mahābhārata, Rājadharma, LVI, 27–29.

27. Ślokau cauśanasā gītau purātāta maharṣiṇā
tāu nibodha mahārāja tvam ekāgramanā nṛpa.
28. Udyamya śastram āyāntam api vedāntapāragam
nigṛhṇīyāt svadharmeṇa dharmāpekṣī narādhipaḥ.
29. Vinaśyamānam dharmam hi yo'bhirakṣet sa dharmavit
na tena dharmahā sa syāt manyustanmanyum ṛcchati.

Compare this with Śukranīti, IV, VII, v. 259.

Udyamya śastram āyāntam bhrūṇam apyātatāyinam
nihatya bhrūṇahā na syāt ahatvā bhrūṇahā bhavet.

Compare further with these ślokas, *Manu*, VIII, 350, 351.

[73] That *Bhrūṇahā* means a Vaidika-Brahman murderer is clear from Kullūkabhaṭṭa's Commentary to Manu, VIII, 317 (annāde bhrūṇahā mārṣṭi patyau bhāryāpacāriṇī), for he says there: "Brahmahā yaḥ tatsambandhi-yo'nnam atti tasmin asau svapāpam saṅkrāmayati. Bhrūṇahānnabhoktuḥ pāpam bhavatīti. Etad atra vivakṣitam na tu brahmaghnaḥ pāpam naśyati tathā bhāryā vyabhicāriṇī jārapatim kṣamamāṇe bhartari pāpam saṁśleṣa-yati."

Compare also *Nānārtharatnamālā* by Irugapadaṇḍādhinātha, II, 125, under the word bhrūṇa: "Bhrūṇorbhake straiṇagarbhe garbhiṇyām śrotriye dvíje."

The Śukranīti contains (IV,VII, 242) this very śloka.[74]

The Harivaṁśa ascribes to Uśanas the wise prescription, that one should never confide in a person whose trustworthiness one has not proved previously, and even to be cautious in giving confidence to a trustworthy person, as the evils of misplaced confidence are serious. This very sentiment, though not quite in the same words, may be found in Śukranīti III, 47–49.[75]

It is peculiar that the Pañcatantra refers these verses on the acquisition of friends to a passage in the Śukranīti, and here,

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[74] *See* Rājadharma LVII, 1, 2.

1. Bhagavān Uśanā hyāha ślokam atra viśāmpate
tad ihaikamanā rājan gadatastannibodhame.
2. Dvāvimau grasate bhūmiḥ sarpo vilaśayān iva
rājānam cāviyoddhāram brāhmaṇam cāpravāsinam;

in its stead we read in the Śukranīti, IV, VII, 242:

Rājānam cāpayoddhāram brāhmaṇam cāpravāsinam
nirgilati bhūmiretau sarpo vilaśayān iva.

[75] *See* Harivaṁśa XVIII, 127–131.

127. Kusauhṛdena viśvāsaḥ kudeśena prajīvyate
kurājani bhayam nityam kuputre sarvato bhayam.
128. Apakāriṇi visrambham yaḥ karoti narādhamaḥ
anātho durbalo yadvannaciram sa tu jīvati.
129. Na viśvaset aviśvaste viśvaste nātiviśvaset
viśvastāt bhayam utpannam mūlānyapi nikrintati.
130. Rājaseveṣu viśvāsam garbhasaṅkramiteṣu ca
yaḥ karoti naro mūḍho na ciram sa tu jīvati.
131. Abhyunnatim prāpya nṛpaḥ prāvāram kīṭako yathā
sa vinaśyatyasandeham āhaivam Uśanā nṛpa.

See also Pañcatantram II, 45, and Kāmandakīya, V, 88, 89.

The Śukranīti expresses in the following ślokas, III, 75–80, the same idea:—

75. Bhṛtyo bhrātāpi vā putraḥ patnī kuryāt na caiva yat
vidhāsyanti ca mitrāṇi tat kāryam aviśaṅkitam.
76. Ato yateta tat prāptyai mitralabdhirvarā nṛṇām
nātyantam viśvaset kañcit viśvastam api sarvadā.
77. Putram vā bhrātaram bhāryām amātyam adhikāriṇam
dhanastrī rājyalobho hi sarveṣām adhiko yataḥ.
78. Prāmāṇikam cānubhūtam āptam sarvatra viśvaset
viśvasitvātmavadgūḍhastat kāryam vimṛśet svayam.
79. Tadvākyam tarkato'nartham viparītam na cintayet
catuṣṣaṣṭitamāṁśam tannāśitam kṣāmayet athā.
80. Svadharmanītibalavān tena maitrīm pradhārayet
dānairmānaiśca satkāraiḥ supūjyān pūjayet sadā.

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III, 76, we find them occurring in connection with this particular subject, the acquisition of friends.[76]

The following Śloka in the Harivaṁśa, which is found a little modified in the Pañcatantra, III, 256, is also ascribed to Uśanas:—" The residue of an enemy, of debt, of fire, O prince! (although scattered) when united, may grow again; therefore one should not allow a residue to remain." The Śukranīti contains nearly the same idea in the same words.[77]

The Kāmandakīya (XII, 67) says that Manu mentions in his law book, that the number of ministers at the court of a king amounts to 12, that Bṛhaspati says it amounts to 16, and that Uśanas fixed it at 20.[78]

In the Śukranīti II, 69 and 70 are as a matter of fact 20 ministers mentioned; *e.g.*, the family priest, vicegerent, chief secretary, war minister, diplomatist, chief justice, learned adviser, finance minister, councillor and ambassador; each of these 10 has a substitute, so that the entire number of ministers amounts to 20.[79]

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[76] *See* Pañcatantram, II, 47.
Sukṛtyam viṣṇuguptasya mitrāptibhārgavasya ca
bṛhaspater aviśvāso nītisandhistridhā sthitaḥ.

[77] *See* Harivaṁśa, XVIII, 136, 137.
136. Na ca śeṣam prakurvanti punarvairabhayāt narāḥ
ghātayanti samūlam hi śrutvemām upamām nṛpa.
137. Śatruśeṣam ṛṇaśeṣam śeṣam agneśca bhūnṛpa
punarvardheta sambhūya tasmāt śeṣam na śeṣayet.
Compare Śukranīti, III, 101–103.
101. Sarpo'gnirdurjano rājā jāmātā bhāginīsutaḥ
rogaḥ śatrurnāvamānyopyalpa ityupacārataḥ.
102. Krauryāt taikṣṇyadussvabhāvāt svāmitvāt putrikābhayāt
svapūrvajapiṇḍadatvāt vṛddhibhītyā upacaret.
103. Ṛṇaśeṣam rogaśeṣam śatruśeṣam na rakṣayet
yācakādyaiḥ prārthitassan na tīkṣṇam cottaram vadet.

[78] Dvādaśeti Mānuḥ prāha ṣoḍaṣeti Bṛhaspatiḥ
Uśanā viṁśatiriti mantriṇām mantramaṇḍalam.

[79] The ślokas in question are as follows:—
69. Purodhāca pratinidhiḥ pradhānassacivastathā
mantrīca prāṅvivākaśca paṇḍitaśca sumantrakaḥ;
70. Amātyo dūta ityetā rājñaḥ prakṛtayo daśa
daśamāṁśadhikāḥ pūrvam dūtāntāḥ kramaśaḥ smṛtāḥ.

The Kāmandakīya (VIII, 22-23) ascribes to Uśanas the observation that the sphere round a king consists of twelve other kings of whom 4 are enemies, 4 friends and 4 neutrals.

A king X, *e.g.*, is surrounded by three circles A, B, C, and in these circles resides one king in each of the four directions of the compass. Immediate neighbours are always hostile to each other, thus a king of the A line is an enemy to his neighbour in the B line, and the same feeling animates B towards his neighbour in C. As X is an enemy to the kings of the A line and the latter are enemies to the kings living in the B circle, X and the B kings become friends by being bound together by their hostility to the A kings, and X and the C kings are neutrals as, they have no interest in common, being too distant from each other. This very idea is well expressed in the Śukranīti, IV, I, 17-18.[80]

The whole Śukranīti is divided into four sections with a fifth supplementary section at the end.

The first section treats on the duties of a king; the second on the position of the crown prince; the third mainly on income and expenditure on servants and wages; the fourth is divided into seven chapters, treating respectively 1, on friendship and (enmity), 2, on the treasury, 3, on administration, 4, on revenue, arts and science, 5, on social laws, 6, on fortresses, and 7, on the army.

This last chapter is given afterwards entirely. It begins with a definition of the word army, goes on to state the different character of the troops; the mode of their movements, whether they march on foot, ride on horses and

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[80] *See* Kāmandakīya, VIII, 22, 23.

22. Udāsīno madhyamaśca vijigīṣostu maṇḍalam
    uśanā maṇḍalam idam prāha dvādaśarājakam.

23. Dvādaśānām narendrāṇām arimitre pṛthak pṛthak;

and Śukranīti, IV, I, 17, 18.

17. Āsamantāt caturdikṣu sannikṛṣṭāśca ye nṛpāḥ
    tatparāstatparā ye'nye kramāt hīnabalārayaḥ.

18. Śatrūdāsīnamitrāṇi kramāt te syustu prākṛtāḥ
    arirmitram udāsīno'nantarastatparasparam.

elephants, or are driven in carriages. Then follows a description of the various kinds of soldiers, and afterwards a description of the animals and conveyances used for army purposes. This is succeeded by a classification of the arms used in warfare and such arms are described. Among these are mentioned firearms and a full account is given of the manufacture of gunpowder.[81] These two subjects will be discussed at large hereafter. After the description of weapons is finished, the different modes of warring, marching, and treating are gone into, and the political conduct of the king is described at length. No undue preference is given to any peculiar subject in particular, and this, if no other proof had been forthcoming, speaks for the genuineness of the work.

It is hardly imaginable that a work, which contains so many important revelations about the ancient state of the civil and military administration of India, and which is, as we have seen, often quoted by works of undisputed antiquity and genuineness—quoted too in a manner which precludes forgery, as the quotations are seldom quite literal—should have been written for the sole object of braggadocio, in order to prove to Europeans the mental superiority of the ancient Hindus by ascribing to them the original invention and manufacture both of gunpowder and firearms, and that the very object of the forgery, its *raison d'être*, should have been frustrated afterwards by keeping the work so zealously secret that except to a few initiated pandits, it was totally unknown to the public!

On the other hand would it not be a subject worthy of investigation for those who doubt the authenticity of the Śukranīti to prove its spuriousness, and to refute the statements brought forward in favor of its genuineness? Mere assertions do not possess any scientific value.

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[81] Gunpowder and firearms are incidentally mentioned also in other parts of the Sukranīti; but in this chapter both are described fully.

The language is simple, terse and antiquated, and in many instances the age of the work manifests itself in this respect. The Śukranīti contains also a large number of half verses and this is another circumstance speaking for its antiquity. In some places it contradicts the precepts of Manu, and as it is not likely that any Hindu would dare to oppose that most venerated law book, we may conclude that the compilation of our work is anterior to or at least contemporary with our revision of Manu's Dharmaśāstra.

Śukra is regarded as the preceptor of the Demons, and though this tradition should be received *cum grano salis*, nevertheless the work written by or ascribed to him may have been regarded as the special law book of the warriors or Kṣatriyas. It was also for this reason originally not much patronised by the Brahmans, but now it is held in great respect by them.[82]

CHAPTER III.

ON THE USE OF GUNPOWDER AND FIREARMS IN GENERAL.

No invention has, within the last five hundred years, been so influential in shaping the destinies of nations as the introduction of gunpowder and of firearms into warfare. The fate of whole realms depended, and depends to a certain extent even now, on the proficiency attained by the comba-

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[82] A copy of the Śukranīti was bought for the Government MSS. Library by my predecessor Mr. Śeṣagiri Śāstrī as far back as 1871, but as long as I could consult only this copy, I could not well attempt to print it. Since that time I have received three more Manuscripts of this work from other parts of the country, which, though coming from different places and being written in different characters, are in very close agreement. A printed specimen published a few years ago by H.H. the Holkar has also come into my hands, and though it is a print abounding with mistakes, it serves me as another Manuscript.

The Śukranīti is now very scarce, and its owners do not like to part with it. I have therefore been obliged to get two MSS. copied, as I could not obtain the originals.

tants in the manufacture of better gunpowder or of projectile weapons of superior quality.

When missiles despatched from projectile weapons by means of gunpowder easily penetrated the knights clad in their strongest suit of armour, while the persons who used those arms were quite beyond the reach of their physically perhaps stronger foes, no wonder that armour was discarded in course of time, and the mediæval knight, who had hitherto without much difficulty maintained his supremacy single-handed against a multitude, found his former superiority gone, and disappeared gradually from the scene. Fortresses, which, before the invention of gunpowder, had been regarded as impregnable, lost their reputation as safe strongholds, and new schemes and practices had to be devised to obviate the difficulties of the altered situation.

Slight improvements in the construction or manipulation of firearms produced often most important alterations in the political history of the world. Frederick the Great is said to have owed in his earlier campaigns many of his victories to the quicker mode of loading adopted by the Prussian army; and it is not so long ago that we ourselves have witnessed a rearrangement of the map of Europe, partly effected by means of superior weapons being used by one nation against another. It is therefore natural that a general interest should be more or less taken in all important advances made in this subject, which, if well studied and applied, provides a nation with the means of ensuring its freedom, independence, and supremacy, so long as actual strength is regarded as the only recognized claim to independent political existence.

The invention of gunpowder has been ascribed to different individuals belonging to different countries, and as the question as to its authorship and antiquity is still an open one, we shall discuss this mooted point and shall endeavour to prove that the oldest documents mentioning and describ-

ing gunpowder are found in India and written in Sanskrit, and that the use of gunpowder and its application to the discharge of missiles from projectile weapons was a well known fact in ancient India, corroborating so far the opinion of those who always pointed out India as the original seat of its invention. The question whether China received the knowledge of gunpowder from India, or *vice versâ*, cannot be touched here, as there do not exist any trustworthy documents bearing on this question. No Chinese work on this question can, with respect to antiquity, be compared with the Śukranīti, so that even if the Chinese should have independently invented gunpowder, the claim as to priority of invention will certainly remain with India.

A Franciscan monk, Berthold Schwarz, whose real name was Constantin Ancklitzen or Anklitz, is generally, especially in Germany, credited with the invention of gunpowder, which, according to tradition, was made at Freiburg in the Breisgau about the year 1330. No doubt Black Barthel, *der schwarze Barthel*, as he was popularly called, dabbled in alchemy and was very fond of chemical experiments, during one of which he was blown up and nearly killed by an explosion of a mortar he was experimenting upon. Eventually he was accused of practising magic and necromancy and sent to prison. A grateful posterity erected in his honour a statue on the spot where the Franciscan Convent of Freiburg had once stood; an honour which he may have richly deserved for many reasons, but surely not for being the original inventor of gunpowder.

Many years previously to Berthold Schwarz, another Franciscan monk, Roger Bacon (1214–94), the Doctor Mirabilis of Oxford, had already pointed out the peculiar qualities of saltpetre, as exemplified in the action of gunpowder. Like every chemical scholar in those times he became an object of clerical suspicion, was incarcerated by his superiors on the plea of practising forbidden magic and

though for a time released by Pope Clement IV, he was again imprisoned under Pope Nicholas III. Bacon suggests that gunpowder should be used in war, as it would supply a powerful means for the destruction of hostile armies. He notices particularly the thunderlike noise and lightninglike flash at the time of its explosion; its application to crackers and fireworks is a subject, he was well acquainted with. He states in his book on the secret works of art and nature two of the principal ingredients which compose gunpowder—saltpetre and sulphur—but not wishing, according to the mysterious inclination of those days, to make the secret known, he uses in his prescription the obscure expression *lura nope cum ubre*, which has been later ingeniously found out to stand for *carbonum pulvere.*[83]

It is now generally supposed that Roger Bacon learnt the secret of the manufacture of gunpowder while he was travelling in Spain, where it was pretty well known among the Moors, who were not only the most learned nation at that period, but who, through religious and national tradition were intimately connected with their more eastern co-religionists and compatriots. An Arabic treatise on gunpowder written in 1249 is up to this day preserved in the Library of the Royal Escurial.

In the National Library at Paris is preserved a work ascribed to one Marcus Graecus. It was published at Paris in 1806 as *Liber ignium ad comburendos hostes, auctore Marco Graeco.* About the nationality and the life of this Marcus Graecus nothing is known for certain. According to some he lived in the 9th, according to others in the 13th

[83] "Sed tamen salis petrae, *lura nope cum ubre* et sulphuris, et sic facies tonitrum et coruscationem, si scias artificium," in Roger Bacon's work "*De secretis operibus Artis et Naturae et de nullitate magiae.*" At another place he alludes to fireworks: "Ex hoc ludicro puerili quod fit in multis mundi partibus scilicet ut instrumento facto ad quantitatem pollicis humani ex hoc violentia salis qui salpetrae vocatur tam horribilis sonus nascitur in ruptura tam modicae pergamenae quod fortis tonitru rugitum et coruscationem maximam sui luminis jubar excedit."

century. The accuracy of the name is even doubtful, as he is also called Marcus Gracchus instead of Graecus. If the latter appellation be the more correct one, it might perhaps be surmised that the work was originally written in Greek. Saltpetre occurs three times in his book, as *sal petrosum; lapis qui dicitur petra salis*, and as *sal petrum.*[84] According to Marcus Graecus the composition of gunpowder is two parts of charcoal, one part of sulphur, and six parts of saltpetre.

Towards the end of the seventh century the architect Kallinikos of Heliopolis, when Constantinople was besieged by the Arabs in 668, manufactured big tubes made of iron or of other metals, formed like big beasts with gaping jaws, out of which were thrown iron, stones and combustibles. In consequence of the havoc caused by these projectiles the siege of the city was raised. The Greeks kept, it is said, the secret of the composition for four centuries, when it was betrayed to the Saracens, who availed themselves of it during the crusades at Jerusalem and also at Damietta. If the ingredients are rightly mentioned, *e.g.*, by the Byzantine princess, Anna Komnena, who wrote the history of her father Alexios, they consisted only of resin, oil, and sulphur, and not of saltpetre. As Kallinikos hailed from Heliopolis, the place otherwise known as Baalbec, and as the Greek fire seems to have been a liquid, the most important ingredient of which was naphtha, which was well known to, and was much made use of by the Eastern nations,—as it is found near Baku on the Caspian Sea, (where the gas, as it escapes from fissures in the earth in the neighbourhood of the oilsprings, has been burning unintermittedly for centuries and is worshipped by Parsees,) in the island of Tchelekin on the other side of the Caspian Sea opposite to Baku, in Mesopotamia, in Kurdistan, in North India, and in China—it is probable that Kallinikos only introduced this powerful com-

[84] *See* John Beckmann's History of Inventions and Discoveries under the article "*Saltpetre, Gunpowder, Aqua fortis.*"

bustible into Western warfare, and that it was before his time employed in the East. At all events it was a most powerful preparation for the destruction of the enemy, and the terror it spread among the troops of Louis IX before Damietta is graphically described by contemporaries. It seems to have even been used in European wars, for, according to Père Daniel, the king Philip Augustus of France had brought home some of it from Acre, and used it at the siege of Dieppe against the English ships there at anchor.[85] It is said that Napoleon the Great became acquainted with the real composition of the Greek fire, but that he pronounced it inapplicable; one of the chief reasons for his decision being probably the fluid state of the combustible.

There exists an old tradition, according to which the Arabs possessed at an early date a knowledge of the manufacture of gunpowder, and that they obtained it originally from India, with which country they had an active commercial intercourse. They are even said to have improved on the original manufacture. That the Arabs received their earliest gunpowder supplies from India, and that this country was the original seat of its invention was very strongly urged so early as the end of the last century by M. Langlès in a paper read in the French Institute in 1798. This opinion is also upheld by Johann Beckmann (1739–1811), whose well known "History of Inventions and Discoveries" (*Beiträge zur Geschichte der Erfindungen*) has passed through many English editions. He says there: "In a word, I am more than ever inclined to accede to the opinion of those who believe that gunpowder was invented in India, and brought by the Saracens from Africa to the Europeans; who, however, improved the preparation of it, and found out different ways of employing it in war, as well as small arms and cannons."

[85] *See* Projectile Weapons of War and Explosive Compounds; by J. Scoffern, M.B., third edition, London, 1858, pp. 50–60.

Having discussed so far the question as to the invention of gunpowder, we now turn to its application in war by means of projectile weapons. The first country in Europe where such projectile weapons were used was Spain. They are mentioned by Arabian writers as far back as 1312, and were used in 1323 at the siege of Baza. The French seem to have employed them since 1338 at first for dismantling castles and fortifications only, and not in the battle field as Edward III of England is said to have done in 1346 at Crecy. The French writers seem to have been indignant at the employment of such destructive arms against human beings, for one of them says: "On ne faisoit point encore usage en France en 1347 de cette arme terrible contre les hommes; les François s'en étoient bien servis en 1338, pour l'attaque de quelques chateaux, mais ils rougissoient de l'employer contre leurs semblables. Les Anglois, moins humains, sans doute, nous devancèrent et s'en servirent à la célèbre bataille de Creci, qui eut lieu entre les troupes du roi d'Angleterre, Edouard III, qui fut si méchant, si perfide, qui donna tant de fil à retordre à Philippe de Valois, et aux troupes de ce dernier; et ce fut en majeure partie à la frayeur et à la confusion qu'occasionnèrent les canons, dont les Anglois se servoient pour la première fois, qu'ils avoient postés sur une colline proche le village de Creci, que les François durent leur déroute."[86] These projectile weapons were formed like tubes and were therefore called *cannons* from *canna*, a reed. In German they were known as *Rohr*, which word has the same meaning. The small firearms were originally without a stock, and as they were very heavy, they used to be placed on a fork when they were discharged. The *arquebuse* with a wheel was first used by Emperor Charles V and Pope Leo X in the year 1521 at the siege of Parma against Francis I, King of France.

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[86] *See* Projectile Weapons of War, p. 117.—In the Library of Christ Church, Oxford, is preserved in a beautifully illuminated Manuscript, which dates from 1336, and which has been in the possession of Edward III, the picture of an armour-clad warrior, who fires a bottle-shaped cannon.

The same Martin Bellay who states this fact, further informs us that the German horse or *Reiter* were the first, who were armed with pistols, and that those troopers were thence called pistoliers. *Muskct* is a still later weapon. It has got its name from the French *mouchet* (Latin *muschetus*, sparrow hawk).[87] The Duke of Alva is reported to have first used them in the Netherlands.

The gun was originally fired by the simple application of a lighted match. The clumsiness and uncertainty of this procedure especially during storms and rains suggested improvements. At first a cock was added to give security to the hand, afterwards a firestone was inserted into this cock and a small wheel was fastened to the barrel. The wheel lock is said to have been invented in 1517 at Nürnberg in Bavaria. The firestone first used was not the flint which was employed later, but the pyrites or marcasite. The match was nevertheless not altogether discarded, as the stone often missed fire, and it was retained together with the wheel. Flint locks were of a far later origin. They were first used in 1687 by the Brunswickers, and they were introduced into England under William III during the years 1692-93. These continued improvements, to which we may add the modern percussion lock, the needle-gun, and the breech-loader, were mainly necessitated by the perilous and defenceless position a soldier was in as soon as he had discharged his gun against an enemy, who chose this moment as convenient to attack him. The greater the rapidity in loading, the greater is the efficiency of the fireweapon.

If we now turn our attention from the West to the East we find that powder and firearms seem to have been much earlier used in the latter than in the former.

It is recorded that in the battle near Delhi fought between Tamerlane and Sultan Mahmud, the latter opposed his

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[87] According to others it was invented at the end of the fifteenth century by one Moketta of Velletri, after whom it is said to have been named.

enemy with 10,000 horsemen, 40,000 men on foot, and a great number of elephants clad in armour. On the top of those elephants were big howdahs from which the sharpshooters flung fireworks and rockets on the troops of Timur; and on the sides of those elephants marched "des jetteurs de pots à feu et de poix enflamée ainsi que des fusées volantés pointées de fer, qui donnent plusieurs coups de suite dans le lieu où ils tombent."[88] According to Clavigo, Timur was beaten in the first engagement through those 50 mailed elephants, but on the following day Timur took many camels and loaded them with dry grass placing them in front of the elephants. When the battle began, he caused the grass to be set on fire and when the elephants saw the burning straw upon the camels, they fled."[89] When attacking Bhatnīr, Timur's troops were received in a similar manner for "the besieged cast down in showers arrows and stones and fireworks upon the heads of the assailants."[90]

According to Ferishṭa, Hulaku Khan, the founder of the Mogol Empire in Western Asia, sent in 1258 an ambassador to the King of Delhi, and when the ambassador was approaching he was received by the vezir of the king with a great retinue, and among the splendid sights were 3,000 fire cars. About the same time we are informed that in the wars between the Chinese and the Mogol invaders a kind of fire-arms was used. It seems to have been like a rocket. It was called impetuous *fire dart*. "A nest of grains—case of chick peas—was introduced into a long tube of bamboo, which, on being ignited, darted forth a violent flame, and instantly the charge was projected with a noise like that of a *pao*, which

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88 *See* Histoire de Timur-bec, par Cherifeddin Ali d'Yezd, traduite par le feu M. Petits de la Croix. 1723, III, p. 94.

89 *See* Narrative of the Embassy of Ruy Gonzalez de Clavijo to the Court of Timur at Samarcand. London, 1859, p. 153.

90 *See* Malfūzāt-i-Tīmūrī in Sir H. M. Elliot's Histories of India, III, 424.

was heard at about the distance of 150 paces."[91] Deguignes says that the Mogols used in 1275 a similar weapon against the Chinese: "Les Chinois reprirent Tchangtcheou; et Tchang-chi-kiai avec un grand nombre de barques qu'il avaït ramassées, s'approcha pour combattre les Mogols. Mais At-chou avec des flèches enflammées, y fit mettre le feu, et les troupes Chinoises, après une vive résistance, se précipitèrent dans le fleuve." [92] At another place Deguignes under the year 917 says that the Kitans[93] carried with them a combustible which they had received from the King of Ou, and that this fluid burnt even under water.[94] Arabian reports inform us that the Arabs used in India *Átish-bāzī*, like those employed by the Greeks and Persians. Ferishta tells us that in the battle which Mahmud of Ghazna fought near Peshawar with Ānandapāl in 1,008 cannon (*top*) and muskets (*tufang*) were used by Mahmud.[95] Colonel Tod says in his Annals of Rajasthan: "We have, in the poems of the Hindu poet Chand, frequent indistinct notices of fire-arms, especially the *nalgola*, or tube ball; but whether discharged by percussion or the expansive force of gunpowder is dubious. The poet

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[91] *See* On the early use of Gunpowder in India; in "The History of India" the posthumous papers of the late Sir H. M. Elliot, K.C.B., edited by Professor John Dawson, vol. VI., p. 460. Ibidem in note 2 is a quotation from Père Gaubil's "Historie de Gentchiscan," p. 69. Les Mangous se servirent alors de *pao* (ou canons) à feu. On avait dans la ville des *pao* à feu . . . Je n'ai pas osé traduire par *canon*, les charactères *pao*, et *ho pao*, un de ces caractères a à côté le charactère *ché*, *pierre*, et c'était une machine à lancer des pierres. L'autre charactère est joint au charactère *ho*, *feu*, et je ne sais pas bien si c'était un canon comme les nôtres. De même, je n'oserais assurer que les boulets dont il est parlé se jetaient comme on fait aujourd'hui.

[92] *See* "Histoire générale des Huns, par M. Deguignes, III, 162.

[93] On the Khitans see my book "Der Presbyter Johannes in Sage und Geschichte," pp. 121–126.

[94] *See* Deguignes, II, p. 61: "Ils (les Khitans) apportoient avec eux une matière inflammable, dont le Roi de Ou leur avoit donné la connoissance, c'était une matière grasse qui s'enflammoit et qui brûloit au milieu des eaux.

[95] *See* The History of India, edited from Sir H. M. Elliot's papers by Prof. John Dowson, VI, 219 and 454.

also repeatedly speaks of "the volcano of the field," giving to understand great guns; but these may be interpolations, though I would not check a full investigation of so curious a subject by raising a doubt."[96] Muhammed Kāsim used such a machine or *manjanīk* when besieging in A.H. 93 (A.D. 711–12) the port of Daibal. The first thing done with this machine was to shoot down from the top of the high pagoda a long pole surmounted with a red cloth.[97] The prophet Muhammed is also credited with having used the *manjanīk* when besieging Tāif in the ninth year of the Hegira, and according to Ibn Kotaibah the projectile weapon in question was already used by Jazynah, the second King of Hyrah, whose date is fixed about the year 200 A.D.[98]

Passing over the statements of Dio Cassius and Johannes Antiochenus, that the Roman Emperor Caligula had machines from which stones were thrown among thunder and lightning, we come to the statement of Flavius Philostratos, who lived at the court of the Emperors Septimius Severus, and Caracalla. In his history of Apollonios of Tyana, he mentions, that when that extraordinary man was travelling in India, he had among other things learnt the real reason why Alexander the Great desisted from attacking the Oxydracae. "These truly wise men dwell between the rivers Hyphasis and Ganges; their country Alexander never entered, deterred not by fear of the inhabitants, but, as I suppose, by religious motives, for had he passed the Hyphasis, he might, doubtless, have made himself master of all the country round them; but their cities he never could have taken, though he had led a thousand as brave as Achilles, or three thousand such as Ajax, to the assault; for they come not out to the field to fight those who attack them, but these holy men, beloved by the gods, overthrew their enemies with tempests and thunderbolts shot from their walls. It is said that the Egyptian

[96] *See* Annals of Rājasthan, I, 310.

[97] *See* Elliot's Posthumous Papers, VI, 462. [98] *Ibidem*, p. 461.

Hercules and Bacchus, when they overran India, invaded this country also, and having prepared warlike engines, attempted to conquer them; they in the meanwhile made no show of resistance, appearing perfectly quiet and secure, but upon the enemy's near approach they were repulsed with storms of lightning and thunderbolts hurled upon them from above." In the apocryphal letter which Alexander is said to have written to Aristotle, he describes the frightful dangers to which his army were exposed in India, when the enemies hurled upon them flaming thunderbolts.[99]

Firdusi ascribed to Alexander this expedient when opposed by Porus. While Sikander, according to the author of the Shah-Nama, was marching against Porus (Fur) his troops became so frightened when they perceived the numbers of elephants which Porus was sending against them that Alexander consulted his ministers how to counteract this foe. Their advice was to manufacture an iron man and an iron horse, place the former on the latter, fix the horse on wheels, fill them both with naphtha and propel them towards the elephants, where they would explode with great havoc.

Such a stratagem is ascribed by the Franciscan monk Johannes de Plano Carpini to Prester John when he was fighting against the Tatars. In my monograph on Prester John I have pointed out to what special event it may probably refer.[100]

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[99] *See* Philostratos Τὰ εἰς τὸν Τυανέα Ἀπολλώνιον. The words used by Philostratos are *βρονταὶ κάτω στρεφόμεναι* (II, 14), and *ἐμβροντηθέντας αὐτοὺς ὑπὸ τῶν σοφῶν* (III, 3).—Compare Projectile Weapons of War, pp. 83 and 84.

[100] *See* Der Presbyter Johannes in Sage und Geschichte, pp. 93 and 94. "Johannes Presbyter venit contra eos (Tataros) exercitu congregato, et faciens imagines hominum cupreas in sellis posuit supra equos, ponens ignem interius, et posuit homines cum follibus post imagines cupreas supra equos; et cum multis imaginibus et equis taliter praeparatis venerunt contra praedictos Tartaros ad pugnam; et cum ad locum prœlii pervenissent, istos equos unum juxta alium praemiserunt, viri autem qui erant retro, posuerunt nescio quid ignem qui erat in praedictis imaginibus et cum follibus fortiter sufflaverunt; unde factum est quod ex igne graeco homines comburebantur et equi, et ex fumo aer est denigratus."

We read in the extracts remaining from the work of Ktesias [101] on India, that an oil was prepared from a big worm, which lived in the deep bed of the river Indus. This animal had two big tusks (jaws? *branchiæ*), slept during the day in the muddy sands of the banks of the rivers, which it left at night in search of food, seizing big animals, which it devoured. According to C. Plinius Secundus this worm catches even elephants.[102] When such an animal has been caught—which is generally done by binding a sheep or a goat to a strong pole—it is kept suspended in the sun for thirty days, that the oil may drip from it, and this oil was collected in earthen pots. Each worm supplied a quantity equal to ten measures of oil. This was sent to the king in sealed jars. The oil had the power to ignite every thing and was for this reason used especially at sieges. Jars filled with this material were thrown into besieged towns and whatever they touched ignited as soon as they broke. Nothing but rubbish and sweepings could extinguish the flame, when once ignited. Neither man, nor animal, nor anything could

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[101] *See* Photii Myriobiblon, 1653, p. 153-156.

"Οτι ἐν τῷ ποταμῷ τῶν Ἰνδῶν σκῶληξ γίνεται, τὸ μὲν εἶδος οἷόν περ ἐν ταῖς συκαῖς εἴωθε γίνεσθαι, τὸ δὲ μῆκος, πήχεων ἑπτὰ τοὺς μείζους δὲ καὶ ἐλάττους. τὸ δὲ πάχος δεκαετέα παῖδα μόλις φασὶ ταῖς χερσὶ περιβαλεῖν. ἔχουσι δὲ ὀδόντας δύο, ἕνα ἄνω καὶ ἕνα κάτω· καὶ ὅ,τι ἂν λάβωσι τοῖς ὀδοῦσι, κατεσθίουσι. καὶ τὴν μὲν ἡμέραν ἐν τῇ ἰλύϊ τοῦ ποταμοῦ διαιτῶνται, τῇ δὲ νυκτὶ ἐξέρχον. καὶ τούτων ὃς ἂν εὐτύχῃ τινὶ ἐν τῇ γῇ, βοῒ ἢ καμήλῳ, καὶ δάκῃ συλλαβὼν ἕλκει εἰς τὸν πυταμὸν, καὶ πάντα κατεσθίει πλὴν τὰς κοιλίας. ἀγρούε δὲ ἀγκίστρῳ μεγάλῳ, ἔριφον ἢ ἄρνα ἐνδησάντων τῷ ἀγκίστρῳ, καὶ ἁλύσεται σιδηραῖς ἐναρμοσάντων. ἀγρούσαντες δὲ τριάκοντα ἡμέρας κρεμῶσιν αὐτον. καὶ ἀγγεῖα ὑποτιθέασι. καὶ ῥεῖ ἐξ αὐτοῦ, ὅσον δέκα κοτύλας ἀττικὰς τὸ πλῆθος. ὅσαν δὲ παρέλθωσιν αἱ τριάκοντα ἡμέραι, ἀποῤῥίπτουσι τὸν σκώληκα. καὶ τὸ ἔλαιον ἀσφαλισάμενοι, ἄγουσι τῷ βασιλεῖ μόνῳ τῶν Ἰνδῶν. ἄλλῳ δὲ οὐκ ἔξεστιν ἐξ αὐτοῦ ἔχειν. τοῦτο τὸ ἔλαιον, ἐφ' ὃ ἂν ἐπιχυθῇ, ἀνάπτει· καὶ καταφλέγει ξύλα καὶ ζῶα. καὶ ἄλλως οὐ σβέννυτι εἰ μὴ πηλῷ πολλῷ τε καὶ παχεῖ.

[102] *See* Caii Plinii Secundi *Historiæ Naturalis*, Libr. IX, 17: "In eodem (Gange flumine) esse Statius Sebosus haud medico miraculo affert, vermes branchiis binis, sex cubitorum, cæruleos, qui nomen a facie traxerunt. His tantas esse vires, ut elephantos ad potum venientes, mordicus comprehensa manu eorum abstrahant." Just previously Plinius had spoken of the Delphinus Gangeticus (platanista).

withstand this terrific combustible. Philostratos confirmed these statements. According to him this worm-like insect lives in the Hyphasis, and the flame caused by the fire can only be subdued by being entirely covered with dust. The king is the sole owner of all these animals. Ktesias, Aelianos, and Philostratos, all three agree in the name of this *worm*, which they call Skolex (σκώληξ). Lassen scorns the possibility of such a worm being in existence, and ascribes the whole description to the imaginative tendency so prevailing in the mind of Oriental nations. The late Professor H. H. Wilson takes a more practical view of the case, by identifying the worm in question with the Indian alligator, and remembering that the oil and the skin of the alligator were considered in ancient times to possess most wonderful qualities, and that the greater part of the other description tallies with the outward appearance and natural habits of the alligator. Wilson seems to have fixed on the right animal.[103] Nevertheless so far as the name σκώληξ is concerned nobody so far as I know has tried to explain it. An animal of seven cubits in length, and of a breadth in proportion to its size, could hardly have been called a *worm*, unless the original name of the beast in question resembled the Greek word *Skolex*. The word represented by the Greek word Skolex is no doubt the Sanskrit term *culukī*, *cullakī* (with the variations *ulupin* or *culumpin*). *Culukin* is derived from *culuka*, mire, it is therefore an animal which likes to lie or to live in mud. The cullakī is described in Sanskrit works as somewhat similar to the *Śiśumāra*, which is identified with the Delphinus Gange-

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[103] *See* Indische Alterthumskunde von Christian Lassen, II, pp. 641 and 642. "Unter diesen Erzeugnissen der überschwänglichen Einbildungskraft der Inder möge hier noch besonders gedacht werden, des aus im Indus lebenden Würmern gewonnenen Oeles, welches die Eigenschaft besessen haben soll, alles anzuzünden und zu der Ansicht verleitet hat, das die alten Inder Feuerwaffen gekannt hätten. Diese Nachricht muss im Gegentheil gebraucht werden, um zu beweisen, dass schon zur Zeit des Ktesias dichterische Vorstellungen, welche den Indern eigenthümlich sind, den Persern bekannt geworden waren." Compare also Elliot's History of India, VI, pp. 478–80.

ticus, though its name denotes a *childkiller*. The cullakī is therefore a large aquatic animal, which because it lives principally in water, is called a fish; and as the crocodile prefers as its place of abode the muddy banks of a river, the name *cullakī* applies most appropriately to it.[104]

It is a peculiar coincidence that in Telugu an iguana is called *uḍumu*, and the lizard is generally called *uḍumupille* or young iguana; the Tamil name of the same animal is *uḍumbu*.

The identity is thus clearly established between the Greek word *skolex* (as the Greeks had no nearer sound than *sk* to resemble the palatal *c*), the Sanskrit words *culukī* (cullakī, culumpī, and ulupī), and the Dravidian *uḍumbu* and *uḍumu*.

On the west coast of India oil is even now obtained from big fish by letting their carcasses lie in the sun and allowing the oil thus to ooze out, which process creates all the while an unbearable stench. With respect to the quantity of oil gained out of a fish like a porpoise and of a crocodile, the superiority rests doubtless with the former, though a well-fed and plump gavial possesses no doubt likewise a considerable amount of oily substance.[105]

The iguana resembles in its shape a crocodile, and both being named in the Dravidian languages and in Sanskrit by the word *culumpī* alias *uḍumbu*, this term applies in the former languages to the smaller and in Sanskrit to the larger animal. The Sanskrit word *musalī* and the Tamil *mudalai* are also identical in origin, but they differ in so far that *musalī*

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[104] The author of the Śabdaratnāvali explains it by *Śiśumārākṛtimatsya*, *i.e.*, a fish which resembles the porpoise; and in Hemacandra's Anekārthasaṅgraha we read *cullakī kuṇḍikā bhede śiśumāre kulāntare;* Viśvaprakāśa and Medinīkara have nearly the same explanation: *Culukī* (*cullakī*) *śiśumārepi kuṇḍibhede kalāntare*, *i.e.*, culukī is a pot; a porpoise (and) a kind of race.

[105] The oil of the crocodile is mentioned in Indian Medical Works, and it is in the list of Dr. Forbes Watson included among the commercial products of India.

denotes a house lizard and *mudalai* a crocodile. In fact the Sanskrit *musalī* and *culumpin* (*culukī*) correspond according to their meaning to the Tamil *uḍumbu* and *mudalai*. The inference to be drawn from this fact is obvious.

The *culukin* is in Sanskrit only a large sized animal; a worm, especially an earth-worm, is called a *kiñculuka* or *kiñculaka* or kiñcilaka, *i.e.*, a little culuka.

No doubt the description of Ktesias is in many respects inaccurate, but I hope to have been able to trace the thread of truth which runs through it.

As oil, especially boiling oil, is used in Indian warfare, the subject is of particular interest in this inquiry.

CHAPTER IV.

INDIA THE HOME OF GUNPOWDER AND FIREARMS.

In every inquiry which is conducted with the object of proving that a certain invention has been made in any particular country it is of the utmost importance to show that so far as the necessary constituents of the object invented are concerned, all these could be found in the country credited with such invention.

The ordinary components of gunpowder are saltpetre, sulphur, and charcoal.

1. It is now generally admitted that the *nitrum* which occurs in the writings of the ancients was not saltpetre, but *natron*, *i.e.*, sodium carbonate; the latter word is nowhere extant in Greek or Roman literature, though the words *nitrum* and *natron* are no doubt in their origin identical.

The word *neter* occurs twice in the Bible. It is described as an alkali, which was used as soap: "For though thou wash thee with nitre, and take thee much sope, yet thine iniquity is marked before me, saith the Lord God" (Jerem. ii. 22); and "As he that taketh away a garment in cold

weather, and as vinegar upon nitre, so is he that singeth songs to an heavy heart." (Proverbs. xv. 22.)

Herodotos mentions nitrum as litron (λίτρον) in his description of the embalming of dead bodies as practised in Egypt.[106] Pliny repeatedly speaks of nitrum, and Galen[107] records that it was burnt to strengthen its qualities. This would have had no effect if applied to salpetre. There is no doubt that had the ancients known saltpetre, its oxydizing properties would soon have been discovered by them, which is the most important step towards the invention of gunpowder.

The word *natron* was introduced into Europe from the East by some European scholars who had been travelling there about the middle of the sixteenth century and who had thus become acquainted with this salt;[108] and though the word natron was originally used there for denoting saltpetre, its other form *nitrum* has been since assigned it; however, as we have seen, the nitrum of the ancients is quite different from our nitre, which is saltpetre (*potassium nitrate*).

Native saltpetre, *i.e.*, saltpetre produced by entirely natural processes is very scarce, so much so that the inventor of *nickel*, Freiherr Axel Friedrich von Cronstedt (1722–65) was unacquainted with it. It is found especially in India, Egypt, and in some parts of America. Since the introduction of gunpowder in European warfare saltpetre has been manufactured wherever native saltpetre could not be obtained in sufficient quantities. It was obtained, from the efflorescence on walls (sal murale) and other sources, this exudation,

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[106] Herodotos, II. 86, *ταῦτα δὲ ποιήσαντες ταριχεύουσι λίτρῳ*, and 87, *τὰς δὲ σάρκας τὸ λίτρον κατατήκει.*

[107] Nitrum ustum proprius ad aphronitrum accedit, utpote ex ustione tenuius redditum (λεπτομερέστερον). Ceterum nitro usto simul et non usto . . . in talibus morbis uti consuevimus (*νίτρῳ δὲ κεκαυμένῳ τε καὶ ἀκαύστῳ καὶ ἡμεῖς ἐπὶ τοιούτων χρώμεθα.* Galenus, *De Simplic. Med. Facult.* IX. Dioscurides says also that nitrum was commonly burnt. Compare Beckmann's History of Inventions, II. 433.

[108] *See* J. Beckmann, History of Discoveries, under the head Saltpetre, Gunpowder, Aquafortis.

together with all the other artificial modes of producing saltpetre, became a perquisite of the sovereign, and this *saltpetre regale* grew in time into as obnoxious a burden to the people as the hunting regale. The saltpetre regale is first mentioned, as having been exercised in 1419 by Günther, Archbishop of Magdeburg.[109]

The little knowledge possessed by the ancients of chemical science, their utter ignorance of chemical analysis, accounts for their not improving, or rather for their not being able to improve the materials at their disposal and discovering the natural qualities of the different alkalis in their possession.

Throughout India saltpetre is found, and the Hindus are well acquainted with all its properties; it is even commonly prescribed as a medicine. India was famous for the exportation of saltpetre, and is still so. The Dutch, when in India, traded especially in this article.

In Bengal it is gathered in large masses wherever it effloresces on the soil, more particularly after the rainy season. In the Śukranīti saltpetre is called *suvarcilavaṇa*, well shining salt. The Dhanvantarinighaṇṭu describes saltpetre as a tonic, as a sonchal salt ; it is also called *tilakam* (black), *kṛṣṇalavaṇam* and *kālalavaṇam*. It is light, shiny, very hot in digestion and acid. It is good for indigestion, acute stomach ache, and constipation. It is a common medical prescription.[110]

2. Sulphur, the second ingredient of gunpowder, is also found in India, especially in Scinde ; it is, and was, largely

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[109] *See* J. Beckmann, History of Discoveries, under the head Saltpetre, Gunpowder Aquafortis.

[110] *See* Dhanvantarinighaṇṭu, in the Description of Salts.

Suvarcalavaṇaproktam rucyakam hṛdyagandhakam
tilakam kṛṣṇalavaṇam tat kālalavaṇam smṛtam.
Laghu sauvarcalam pāke vīryoṣṇam viśadam kaṭu
gulmaśūlavibandhaghnam hṛdyam surabhilocanam.

Amarakoṣa, IX, 43. Sauvarcale'kṣarucake tilakam tatra mecake, and 110 sauvarcalam syāt rucakam.

imported into India from the East. It is well known and received its name from its smell, being called *gandha* or *gandhaka*, smell, or in this case as it has not a good smell, rather from its *stench*. Its quality differs with its color, according as it is white, red, yellow, or bluish. Though sulphur is a very important part of gunpowder, gunpowder is in some parts of India even prepared without it. Sulphur was always in great demand in India, and in medicine it is often made use of.[111]

3. *Charcoal* is the third component part of gunpowder. Its constitution varies necessarily with the plants which in the different countries are used in its manufacture. In Prussia the coal of the alder, limetree, poplar, elder, willow, hemp, and hazel is used for powder. The charcoal of willow trees is especially esteemed on account of its excellent qualities. In the Śukranīti the *arka* (*Calatropis gigantea*), the *snuhi*, *snuhī* or *snuh* (*Euphorbia neriifolia*), and the *Rasona* (*Allium sativum*) are given as the plants whose charcoal is best fitted for gunpowder.

The *arka*, gigantic swallow wort, is a common bush growing in great quantities all over the country. It has a very good fibre, and is regarded by the natives as possessing most powerful and useful qualities. If the arka is used with discretion when iron is being forged, it contributes greatly to the excellence of the Indian steel. It is applied against epilepsy, paralysis, dropsy, &c. Its milky juice is smeared on wounds. It is a common sight in India to see suffering people applying it. The root is also used against syphilis. Its charcoal is very light and much used for pyrotechnical

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[111] Śveto raktaśca pītaśca nīlaśceti caturvidhaḥ
gandhako varṇato jñeyo bhinnabhinnaguṇāśrayaḥ; *Rājanighaṇṭu.*

It is cleaned by being boiled with castor oil or goat's milk.

Gandhakam palamātram ca lohapatrāntare kṣipet
eraṇḍatailam sampūrya pacet śuddhirbhaviṣyati.
Athavā chāgadugdhena pacitam śuddhim āpnuyāt.

See Sadvaidyajīvana.

preparations, and its qualities in this respect are so well known that every school boy is acquainted with them and prepares his own powder and mixture with this plant. Its name in Tamil is *erukku*, in Malayalam *eruka,* in Telugu *jillēḍu*, in Bengali *akund*, and in Hindustani *mudar* or *ark*.

b. The *snuhī*, *snuh*, (triangular spurge, *kalli* in Malayālam, *pāśāṅ kalli* in Tamil, *bontajammuḍu* in Telugu, *narashy*, *seyard* in Hindustani and *narsy* in Bengali) grows like the arka in waste places all over the Indian Peninsula. The qualities of this plant for pyrotechnic displays are as well known as those of the Calatropis gigantea. Dried sticks of this plant are scarce. It is also widely used as a medicinal plant, externally against rheumatism, and internally as a purgative ; it is given to children against worms.[112]

c. The *rasona* is a kind of garlic ; the Marathi equivalent is *lasuṇa*. Its botanical name is *Allium sativum*.

The prescription for making gunpowder is, according to the Śukranīti, as follows : mix 5 parts of saltpetre with 1 part of sulphur and 1 part of charcoal. The charcoal is to be prepared from the arka, snuhi, and other similar plants in such a manner that during the process the plants are so covered that the smoke cannot escape. The charcoal thus obtained must be cleaned, reduced to powder, and the powder of the different charcoals is then to be mixed. After this has been done, the juice of the arka, snuhi, and rasona must be poured over the powder which is to be thoroughly mixed with this juice. This mixture is to be exposed and dried in the sun. It is then finally ground like sugar and the whole mixture thus obtained is gunpowder.[113]

[112] With respect to the *snuhi* there exists a Tamil proverb, reflecting on its leafless state and big growth. It runs as follows : " There is no leaf to contain a mustard seed ; but there is shade to shelter an elephant." (கடுகுசுருட்ட இலையில்லை ; யானைதங்க இடமுண்டு).—*Compare also :* The Useful Plants of India, by Major Heber Drury, 1858, p. 100-102.

[113] *See* Chapter V, śl. 141, 142.

The proportion of saltpetre varies, as some take 4 or 6 parts instead of 5, but the quantities of sulphur and charcoal remain unaltered.[114] These two are the usual receipts. Nevertheless the mixture is often changed when the gunpowder is to be of a particular color or if it has to serve a special purpose. The three principal ingredients are mixed in different proportion, and realgar, opiment, graphite, vermilion, the powder of magnetic iron oxide, camphor, lac, indigo, and pine-gum are added to the compound according as they are required.[115]

It seems peculiar that powder should not have been mentioned in Sanskrit works, but this is not an isolated instance of the silence observed in them on matters of historical importance. It is most probable that the very common occurrence of gunpowder interfered with its being regarded as something extraordinary and worth mentioning. The actual mode of preparing the different sorts of gunpowder may on the other hand have been kept a secret in certain classes, and such a state of affairs coincides with the Indian system of caste. Explosive powder either used for rejoicings as fireworks or for discharging projectiles was known in India from the earliest period, and its preparation was never forgotten; but as India occupied in ancient times such an isolated position, it is not singular that the knowledge of this compound did not earlier extend to other countries. However wonderful the composition and however startling the detonating effect of powder may be to the uninitiated outsider, to those who have been familiar with them from their earliest youth all seems natural and intelligible. India is the land of fireworks; no festival is complete without them, and as the materials for their manufacture are all indigenous, and of easy access, there is no difficulty in gratifying such desires.

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114 *See* Chapter V, śl. 143.

115 *See* Chapter V, śl. 146–148.

In an extract taken from the *Mujmalut Tawārīkh*—which was translated in 1126 from the Arabic, into which language it had been translated a century previously from a Sanskṛit original—we read: "that the Brahmans counselled Hāl to have an elephant made of clay and to place it in the van of his army, and that when the army of the king of Kashmir drew nigh, the elephant exploded, and the flames destroyed a great portion of the invading force. Here we have not only the simple act of explosion, but something very much like a fuze, to enable the explosion to occur at a particular time."[116]

Vaiśampāyana mentions among the things to be used against enemies *smoke-balls*, which contained most likely gunpowder, and which were according to the explanation proposed by his commentator made of gunpowder.[117]

The following stanza, which is taken from the Rājalakṣmīnārāyaṇahṛdaya, a part of the Atharvaṇarahasya, is no doubt a clear proof of the fact that the Hindus were familiar with gunpowder at a very remote period: "As the fire prepared by the combination of charcoal, sulphur, and other material depends upon the skill of its maker so also may thou, O! representative of knowledge (Lakṣmī), by the application of my faith manifest thyself quickly according to my wish."[118]

The Sanskrit word for gunpowder is *agnicūrṇa*, fire-powder, which is occasionally shortened into *cūrṇa*. The Dravidian languages have all one and the same word for medicine and gunpowder; in Tamil *marundu*, in Telugu *mandu*, in Kanarese *maddu*, and in Malayālam *maruna*.

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[116] *See* the History of India of the late Sir H. M. Elliot, VI, 475; I, 107.

[117] *See* note 60.

[118] *See* Rājalakṣmīnārāyaṇahṛdaya:
Iṅgālagandhādipadārthayogāt
karturmanīṣānuguṇo yathāgniḥ
caitanyarūpe mama bhaktiyogāt
kāṅkṣānurūpam bhaja rūpam āśu.

Occasionally the word gun (*tupāki*) is prefixed to remove any doubt as to what powder is meant. In Malayālam, the word *veḍi*, which means explosion, is prefixed. The Chinese crackers are called by the Tamulians *Śīni veḍi*—Chinese crackers—to distinguish them from the Indian crackers. The word *marundu* is most probably derived from the Sanskrit past participle *mardita*, pounded, in the sense of different ingredients being pounded together, as a medicine powder. The meaning of gunpowder is then in a special sense derived from this general expression. The Dravidian equivalent of cūrṇa is *Śuṇṇāmbu* in Tamil, *Sunnamu* in Telugu, chalk.

From the subject of gunpowder we now turn to the weapon, to which it is applied, *i.e.*, to the firearms.

Two kinds of firearms are described in the Śukranīti, one is of small size and the other is of large size. The former is five spans long,[119] has at the breech a perpendicular and horizontal hole, and sights at the breech and muzzle end of the tube. Powder is placed in the vent, near which is a stone, which ignites the powder by being struck. Many dispense with this flint. The breech is well wooded and a ramrod compresses the powder and ball before the discharge. This small musket is carried by foot-soldiers.

A big gun has no wood at its breech ; moves on a wedge in order to be directed towards the object to be shot at, and it is drawn on cars.

The distance which the shot travels depends upon the strength of the material from which the gun is made, upon the circumference of the hole, and the gun's compactness and size. The ball is either of iron or lead or of any other material. Some big balls have smaller ones inside. The gun itself is generally of iron, occasionally also, as we

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[119] A span (vitasti) is the distance between the extended thumb and the little finger.

have seen in the Nītiprakāśikā, of stone. The gun is to be kept clean and must be always covered.[120]

The term used for gun *nālika* (*nalika*, *nālīka*) is derived from the word *nāla* (*nala*), a reed, a hollow tube, which is another form for its synonyms *naḍa*, *nāḍi*, or *nāḍī*; in the same way *nālika* corresponds to *nāḍika*. Considering that the guns were in ancient times made out of bamboo, and that some bamboo guns are still used in Burmah, the name appears both appropriate and original. That the idea of bamboo being the original material for guns was still in the mind of the author of the Śukranīti seems to be indicated by his calling the outside of the stock of a gun *bark* (tvak.)[121]

The gun is very seldom mentioned in Sanskrit writings, and even where it has been mentioned the meaning of those passages has been generally misunderstood. In all European Sanskrit dictionaries the word *nālika* or *nālīka* has been rendered as stalk, tube; arrow, dart, &c., but the third signification gun is not given; though it is one which is known to every learned Paṇḍit. At the outset every body can easily see that the meaning of arrow and of gun can be rightly applied to a reed; the arrow is a reed which is discharged as a missile, and a gun is a reed out of which missiles are shot.

In the ślokas 21 and 24 of our extract of the Śukranīti we read that a king should keep on a big war chariot two large guns, and in śl. 31 we are further informed that his beautiful iron chariot should be furnished with a couch, a swing, and among other things also with sundry arms and projectile weapons. This tallies with an account concerning the fortifications of Maṇipura, as described in Mr. J. Talboys Wheeler's "History of India:" On the outside of the city were a number of wagons bound together with chains, and in them

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[120] *See* Śukranīti, Chapter V, śl. 135–39 and 149–151.
[121] *See* Śukranīti, Chapter V, śl. 139.

were placed fireworks and fire weapons, and men were always stationed there to keep guard." This statement is very important, and if substantiated would be of the greatest weight in this inquiry; but none of the Sanskrit Manuscripts of the Mahābhārata which I have searched contains this Śloka. However the above mentioned statement appears to rest on good authority, as the Śukranīti declares, that the wall of a fortress "is always guarded by sentinels, is provided with guns and other projectile weapons, and has many strong bastions with proper loop-holes and ditches."[122]

In the second stavaka of the Bhāratacampū composed by Anantabhaṭṭa, some three hundred years ago, we find the following simile: "The fierce warrior who killed his enemy with heaps of leaden balls, which emerge quickly from the gun lighted by a wick, is like the rainy season which killed the summer with hailstones which descend quickly from the rows of black clouds lighted by lightning."[123]

While the verse just quoted from the Bhāratacampū reveals an intimate knowledge of firearms, yet its apparent recentness may be alleged as an objection against its being produced as an authority for the existence of firearms in India at an early period. To obviate such further objections a śloka will now be given from an undoubted early poem, the Naiṣadha which describes the adventures of Nala and is generally ascribed to one Śrīharṣa, a Brahman, who must not be confounded with Śrīharṣa, the king of Kaśmīra. Its date goes back to the twelfth century, *i.e.*, before the introduction of firearms into Europe. The verses in question run as follows: "The two bows of Rati and Manmatha are

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[122] *See* The History of India, Vol. I, pp. 405 & 422; and read Appendix.—*Compare* also Śukranīti I, 238 and 255.

238. Yāmikai rakṣito nityam nālikāstraiśca saṁyutaḥ
Subahudṛḍhagulmaśca sugavākṣapraṇālikaḥ.

[123] *See* Kālāmbudālinalikāt kṣaṇadīptivarttyām
sandhukṣitāt sapadi sadhvaninissaradbhiḥ;
varṣāśmasīsagulikānikaraiḥ kaṭhoraiḥ
gharmābhiyātim avadhīt ghanakālayodhaḥ.

certainly like her (Damayantī's) two brows, which are made for the conquest of the world, the two guns of those two (Rati and Manmatha) who wish to throw balls on you, are like her (Damayantī's) two elevated nostrils."[124] To leave no doubt that guns are meant here, the learned commentator Mallinātha explains *nālika* as the Droṇicāpa, the projectile weapon from which the *Droṇicāpaśara,* a dart or a ball is discharged, an expression, we have already noticed in Vaiśampāyana's Nītiprakāśikā.[125]

On the other hand it is doubtful whether the *aśani* missile, which was given by Indra to Arjuna and which made when discharged a noise like a thunder-cloud, alludes to firearms, as *von Bohlen* explains it.[126]

In the first book of the Śukranīti we find it stated that the royal watchmen, who are on duty about the palace, carry firearms. The Kāmandakīya, acknowledged as one of the earliest works on Nītiśāstra, says that "Confidential agents keeping near the king should rouse him by stratagems, gunfiring and other means, when he is indulging in drinking bouts, among women, or in gambling."[127] It seems from this statement that the practice of firing guns as signals

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[124] *See* Naiṣadha, II, 28.

Dhanuṣī ratipañcabāṇayorudite viśvajayāya tadbhruvau
nalike na taduccanāsike tvayi nālīkavimuktikāmayoḥ.

Mallinātha explains the second line as follows: "Damayantyā uccanāsike unnatanāsāpuṭe tvayi nālīkānām *droṇicāpaśarāṇām* vimuktim kāmayate iti tathoktayostayośśīlakām abhikṣācaribhyo ṇa iti ṇa pratyayaḥ. Nalike *droṇicāpe* na kim iti kākūḥ pūrvavat utprekṣā.

[125] *See* p. 180.

[126] *See* Das alte Indien, mit besonderer Rücksicht auf Aegypten. Von Dr. P. von Bohlen, II, p. 66; *compare* Mahābhārata, Vanaparva, Indralokābhigamanaparva, I, 3, 4.

3. Evam sampūjito jiṣṇuruvāsa bhavane pituḥ
upaśikṣan mahāstrāṇi sa saṁhārāṇi pāṇḍavaḥ.
4. Cakrasya hastāt dayitam vajram astram ca dussaham
aśanīśca mahānādā meghavarhiṇalakṣaṇāḥ.

[127] *See* Kāmandakīya, V, 51.

Pānastrīdyūtagoṣṭhiṣu rājānam abhitaścarāḥ
bodhayeyuḥ pramādyantam upāyairnālikādibhiḥ.

All the MSS. I have consulted give nālika, and so do also the prints in Telugu and Grantha characters. The Calcutta edition has *nāḍika* which as

was in vogue among the ancient Hindus, if we can trust the evidence of one of the oldest Sanskrit writings.

In the preface to a Code of Gentoo Laws, or Ordinances of the Pundits, occurs the following passage: "It will no doubt strike the reader with wonder to find a prohibition of firearms in records of such unfathomable antiquity; and he will probably from hence renew the suspicion which has long been deemed absurd, that Alexander the Great did absolutely meet with some weapons of that kind in India as a passage in Quintus Curtius seems to ascertain. Gunpowder has been known in China, as well as in Hindustan, far beyond all periods of investigation. The word firearms is literally Sanskrit Agnee-aster, a weapon of fire; they describe the first species of it to have been a kind of dart or arrow tipt with fire and discharged upon the enemy from a bamboo. Among several extraordinary properties of this weapon, one was, that after it had taken its flight, it divided into several separate darts or streams of flame, each of which took effect, and which, when once kindled, could not be extinguished; but this kind of agnee-aster is now lost. Cannon in the Sanskrit idiom is called Shet-Agnee, or the weapon that kills a hundred men at once, from (Shete) a hundred, and (gheneh) to kill; and the Pooran Shasters, or Histories, ascribe the invention of these destructive engines to Beeshookerma, the artist who is related to have forged all the weapons for the war which was maintained in the Suttee Jogue between Dewtā and Ossoor

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I explained on page 232 as *ḍ* and *l* are often interchanged, *ḍalayorabhedaḥ*, is another form for *nālika*, if not so it must be regarded as an altogether false reading. The word *nāḍika* (given in Böthlingk and Roth's Sanskrit Wörterbuch as nāḍikā) occurs nowhere else, and the only reference to it in the just now mentioned Sanskrit dictionary is this passage from the Kāmandakīya, and there even the meaning of the word is not positively stated, but it is merely suggested that it may be a gong (wohl, eine metallene Platte, an der die Stunden angeschlagen werden).

(or the good and bad spirits) for the space of one hundred years." [128]

And again we read in page 53 of the same work: "The Magistrate shall not make war with any deceitful machine, or with poisoned weapons, or with cannon and guns, or any other kind of firearms; nor shall he slay in war a person born an eunuch, or any person who putting his hands together supplicates for quarter, nor any person who has no means of escape, nor any man who is sitting down, nor any person who says, 'I am become of your party,' nor any man who is asleep, nor any man who is naked, nor any person who is not employed in war, nor any person who is come to see the battle, nor any person who is fighting with another, nor any person whose weapons are broken, nor any person who is wounded, nor any person who is fearful of the fight, nor any person who runs away from the battle."

As these passages are so often quoted without their origin being stated, it may at once be remarked that the prescription about the use of arms and the treatment of persons is a free translation from the seventh book of the institutes of Manu, vv. 90–93.

The important question at issue is, does this passage in Manu refer to firearms or not? In our opinion it certainly alludes to them, but still others prefer to apply it strictly to darts blazing with fire. The original words in Manu are:

> Na kūṭair āyudhair hanyāt yudhyamāno raṇe ripūn
> na karṇibhir nāpi digdhair *nāgnijvalitatejanaiḥ*.

"No one should strike in a combat his enemy with concealed weapons, nor with barbed arrows, nor with poisoned arrows, nor with darts kindled by fire." Kullūkabhaṭṭa, the latest

[128] *See* A Code of Gentoo Laws, or Ordinances of the Pundits, from a Persian translation, made from the original, written in the Shanscrit Language (by Nathaniel Brassey Halhed), London 1770, pp. LII, LIII, and 53.

commentator of Manu, favors by his explanation the opinion of those who take this passage in the sense "as darts blazing with fire."[129] But then the questions arise, whether Kullūkabhaṭṭa, who lived about four hundred years ago, expresses the *whole* meaning of the sentence, or whether Manu, though mentioning only ignited arrows, does not rather allude to firearms in general? The translation found in Dr. Monier Williams' Sanskṛit English Dictionary under *agnijvalitatejana* 'having a point hardened in fire' is quite beyond the mark.

The meaning of arrow (*śara, bāṇa*) is much wider than is generally supposed. It was, and became more so in time, the usual term for any missile, whether it had the shape of an arrow or not; in the same way as the word *Dhanu* signified in course of time every missile or weapon, so that the Dhanurveda, the knowledge of the bow comprised the knowledge of all other arms.

For instance, the shot out of a gun is called a *śara*, as we have seen when describing the nālika,[130] but it may be a ball and not an arrow. A rocket is generally styled a bāṇa (compare the Hindi term *bān*, a rocket); and *bāṇapaṭṭrai* in Tamil, or *bāṇapaṭra* in Telugu denotes a gunpowder or firework factory.

A comparison of the context of the Mānavadharmaśāstra with those of the Śukranīti and the Nītiprakāśikā makes it clear that Manu alludes to firearms. The Śukranīti runs in our extract as follows:—

277. A king, bearing in mind the six principles of policy and the designs of his enemy and his own, should always kill his enemy by fair and unfair fighting.

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[129] *See* Kullūkabhatta to Manu, VII, 90. Kūṭānyāyudhāni bahiḥ kāṣṭhādimayāni antarguptaniśitaśastrāṇi; etaiḥ samare yudhyamānaḥ śatrum na hanyāt; nāpi karṇyakāraphalakairbāṇaiḥ; nāpi viṣāktaiḥ, nāpyagnidīptaphalakaiḥ.

[130] *See* note 25, *droṇicāpaśarerinī*, discharging the missile of the Droṇicāpa.

278. When the king gladdens his soldiers on the march with a quarter extra pay, protects his body in the battle with a shield and armour;

279. has induced his soldiers to drink up to a state of intoxication, the strengthener of bravery, the soldier kills his enemy with a gun, swords, and other weapons.

280. A charioteer should be assailed by a lance, a person on a carriage or elephant by an arrow, an elephant by an elephant, a horse by a horse.

281. A carriage is to be opposed by a carriage, and a foot soldier also by a foot soldier, one person by another person, a weapon by a weapon, or a missile by a missile.

282. He should not kill a person who is alighted on the ground, nor one who is emasculated, nor one who has joined his hands as a supplicant, nor one who sits with dishevelled hair, nor one who says "I am thine."

Then follow beginning with 282 up to 284 the same exceptions as found in Manu, VII, 91—93, and specified in Halhed's Code.

The Śukranīti goes then on stating expressly:

286. These restrictions exist in fair but not in unfair fighting; to ensure the destruction of a powerful enemy there is no fighting equal to unfair fighting.

287. Unfair fighting was certainly observed by Rāma, Kṛṣṇa, Indra, and other gods; Bāli, Yavana, and Namuci were killed by unfair fighting.

We see thus that the Śukranīti is in direct opposition to the law code bearing Manu's name, and considering the estimation in which the latter was held, it can hardly be assumed that a member of the Brahmanic community—in which term I include all the three higher castes and the Śūdras within its pale—could have dared to compose it after the text of the Mānavadharmaśāstra had once been finally settled as it stands to this day.

The Nītiprakāśikā coincides entirely with Manu, VII, 89, and in the first half of the 90th śloka, but differs in the second half of the 90th and the first half of the 91st śloka, and then agrees again, but this difference in two lines is of the greatest importance for our subject.[131]

Manu, VII.	*Nītiprakāśikā, VII.*
89. Those rulers of the earth, who desirous of defeating each other, exert their utmost strength in battle without ever averting their faces, ascend after death directly to heaven.	44. The same.
90. No one should strike in a combat his enemy with concealed weapons, *nor with barbed arrows, nor with poisoned arrows, nor with darts kindled by fire.*	45. No one should strike in a combat his enemy with concealed weapons, *nor with poisoned arrows, nor with machines kindled by fire* (guns), *nor also with various stratagems.*
91. *Nor should he kill a person who is alighted on the ground,* nor one who is emasculated, nor one who has joined his hands as a supplicant, nor one who sits with dishevelled hair, nor one who says "I am thine."	46. *Nor should he kill a person who has climbed on a tree,* nor one who is emasculated, nor one who has joined his hands as a suppliant, nor one who sits with dishevelled hair, nor one who says "I am thine."

[131] *See* Manu, VII, 90, 91.

90. Na kūṭairāyudhairhanyāt yudhyamāno raṇe ripūn, *na karṇibhir nāpi digdhair nāgnijvalitatejanaiḥ.*

91. *Na ca hanyāt sthalārūḍham* na klībam na kṛtāñjalim, na muktakeśam nāsīnam na tavāsmīti vādinam.

Nītiprakāśikā, VII. 45, 46.

45. Na kūṭairāyudhairhanyāt yudhyamāno raṇe ripūn, *digdhairagnyujjvalairyantraistantraiścaiva pṛthagvidhaiḥ.*

46. *Na hanyāt vṛksam ārūḍham* na klībam na kṛtāñjalim, na muktakeśam nāsīnam na tavāsmīti vādinam.

The punishment of any one who contravenes these laws was that he should inherit all the sins of him whom he thus kills unlawfully, and his victim would become heir to all the virtues of his murderer.[132] If what is most probable the Śukranīti and Nītiprakāśikā are of about the same age as our recension of the Mānavadharmaśāstra, the question as to firearms being known at that period can only be answered in the affirmative.

It appears that before the codification of the law in law-books, the rules and precepts regulating certain subjects seem to have been generally known among the people and even assumed already the form of verse. Otherwise it can hardly be explained that the very same ślokas are found in different authors, unless one is prepared to state that one must have copied them from another. But for such a supposition there exists no proof. It is rather more likely that they were common property and then embodied in the respective codes. There is not the slightest doubt that the interdict of the Mānavadharmaśāstra interfered a great deal with the popularity of firearms, and that though they continued to be used, they were less frequently or perhaps less openly employed. The Mahābhārata too contains many precepts by which mean, deceitful, and cruel behaviour is forbidden in war, but in reality those laws were often broken. The behaviour of the Kauravas against the Pāṇḍavas, whom they tried to burn

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[132] As the Nītiprakāśikā differs somehow from the Mānavadharmaśāstra and from the Śukranīti we give here the following verses.

VII. 47. Na prasuptam na praṇatam na nagnam na nirāyudham
na yudhyamānam paśyantam na pareṇa samāgatam.
48. Āyudhavyasanam prāptam nārtam nātiparīkṣatam
na hīnam na parāvṛttam na ca valmīkam āśritam.
49. Na mukhe tṛṇinam hanyāt na striyo veṣadhāriṇam
etādṛśān bhaṭairvāpi ghātayan kilbiṣī bhavet.
50. Hanyamānasya yat kiñcit duṣkṛtam pūrvasañjitam
tat saṅgṛhya svasukṛtam tebhyo dadyāt tathāvidhaḥ.

With *na mukhe tṛṇinam hanyāt* (śl. 49) compare Mahābhārata, Rājadharma, XCVIII, 48a : Tṛṇapūrṇamukhaścaiva tavāsmīti ca yo vacet.

and to destroy by every imaginable means, the murder of the sleeping young Pāṇḍavas perpetrated by the Brahman Aśvatthāma; these and many more similar acts prove that though the laws of humanity were acknowledged *in abstracto* they were not as in the present day followed *in concreto.*

Besides the interference of these moral rules with the extension of the use of such weapons, another and perhaps even more potent reason can be produced. Firearms were such powerful engines of war, that every one, who possessed them, kept their construction and handling as secret as possible. This is, in fact, the real reason, why so few books treat on this subject, and why such works are so jealously kept secret that it is most difficult to get hold of them.

The Mahābhārata and Rāmāyaṇa are full of the description of wonderful divine firearms, the Āgneyāstra. It may be that a solid substratum of fact underlies these descriptions, but they are so adorned with wonders that they outrun all reality. Perhaps the reason of these exaggerations was to conceal the real element of truth underlying them.

Aurva, the son of the sage Ūrva, or, according to the Mahābhārata, a son of Cyavana, was scarcely born when he threatened to burn the world by the flame proceeding from him. This flame was then removed into the sea, where it is known as the submarine fire (baḍavāgni).[133] Aurva became later the guardian of the orphaned Sagara, whom he instructed in the Vedas and to whom he gave the fire weapon (āgneyāstra), by means of which Sagara regained the kingdom which his father Bāhu had lost. Agniveśa, the son of Agni, received, according to the Mahābhārata, the Āgneyāstra from Bharadvāja, and Agniveśa handed this weapon down to the son of Bharadvāja, Droṇa. This wonderful fire weapon plays an important part in the epic and dramatic literature, but it should not be overlooked that similar

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[133] *See* Harivaṁśa, XIV.

wonderful weapons were ascribed also to other gods besides, *e.g.*, to Brahma, to Vāyu, to Varuṇa, &c., &c.[134]

Considering that Śukra or Uśanas is a member of the Bhārgava family, it seems a striking coincidence that the āgneyāstra is through Aurva also connected with the same family.

It may look strange that while gunpowder and firearms appear to have been known in India since immemorial times, and though we know that fireworks and firearms were always in use—the Portuguese, the first Europeans who came to this country, were struck at their landing with the display of both[135]—so few actual traces of them should be found in this country. But while admitting to a certain extent the truth of this observation, we must also consider that only very few old buildings have been preserved in India from ancient times, that we have nothing which can vie in age with Grecian antiquities, omitting Egyptian and Assyrian antiquities altogether. Yet still we can prove the existence of firearms by carved images of them being preserved in some ancient stone temples.

1. In the Madura District lies not far north from Rāmnāḍ (*Rāmanāthapura*) on the sea the ancient *Tirupallāṇi.* It is

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[134] *See* Harivaṁśa, XIV, 33.

Āgneyam astram labdhvā ca Bhargavāt Sagaro nṛpaḥ
jigāya pṛthivīm hatvā Tālajaṅghān sahaihayān.

Compare Mahābhārata, Ādiparva, CXXX, 39, 40.

39. Agniveśam mahābhāgam Bharadvājaḥ pratāpavān
pratyapādayat āgneyam astram astravidām varaḥ.

40. Agnestu jātassa munistato Bharatasattama
Bhāradvājam tad āgneyam mahāstram pratyapādayat.

See Śākuntala, III, 56, and Uttara Rāma Caritra, VI.

[135] Castanheda says in his description of Vasco da Gama's entrance into Calicut: " The procession again set out, preceded by many trumpets and sacbuts sounding all the way ; and one of the Nayres carried a caliver, which he fired off at intervals." *See* Elliot's History of India, VI, 467 ; compare Kerr's Collection of Voyages, Vol II, 364. According to Sir A. Phayre, the king of Pegu, when advancing in 1404 up the Irāvadi against the king Meng Khoung could neither land at nor attack Prome, as it was defended with cannon and muskets ; *see* Journal, Asiatic Soc. Bengal, 1869, XXXVIII, p. 40.

celebrated throughout India, on account of its famous temple dedicated to Ādijagannātha, for pilgrims visit it from Benāres and other places in the north. The erection of this shrine goes back to a far distant period. On the outside of an ancient stone maṇḍapa are seen the figures of some soldiers carrying in their hands small firearms. The dress of these sepoys is also peculiar, as the belts round their waists are provided with little bells. The soldiers have slippers on their feet and a peculiar cap on their heads.

2. In *Kumbhaghoṇa* (Combaconum) is a temple devoted to Śārṅgapāṇi, *i.e.*, to Viṣṇu bearing in his hands his bow Śārṅga. It is one of the most ancient, largest, and most celebrated shrines in the Tanjore District. The height of the pagoda amounts to about 180 feet, and the numbers of its stories to eleven. On the left side of the front gate of the fifth story from the top is a king sitting in a chariot drawn by horses surrounded by his troops. In front of the king stand two sepoys with small firearms in their hands which look like pistols. The lower part of the pagoda is of solid stone, the higher ones and also the story just described partly of brick and partly of stone, *i.e.*, the principal figures are all made of stone, but they are every ten years covered with a layer of chalk and bricks. The Śārṅgapāṇi pagoda is said to be about 500 years old. Its sanctity and beauty is praised by seven Ālvārs, so that as it has not been rebuilt since that time, it must have been in existence when the sages lived. Tirupati is glorified by nine and Śrīraṅgam by ten Ālvārs.

3. In *Kāñcīpuram* (Conjeveram) is a famous maṇḍapa, which, as it rests on a hundred columns, is called *Śatastambhamaṇḍapa*, or *Nūṭikālmaṇḍapa* in Tamil. It was erected by Lakṣmīkumāratātācārya also called Koṭikanyādānatātācārya, as he was very rich and generous, and was said to have given a wedding present of 50 rupees to a krore (or ten millions) of girls. Being a Tatācārya he belonged to one of the highest

74 priestly families of the Vaiṣṇavabrāhmans, as the Tātācāryas trace their descent to Nādhamuni. He was the author of a work on Vedānta philosophy, and had at his own cost erected gopurams at Kāñcīpuram, Tirupati, Śrīraṅgam, and Tirumāliraṁśolai. His eldest son was Tirumalatātācārya, who administered the Anagundi kingdom for a while after the death of Vēṅkaṭapatirāya. When the Muhammedans occupied Kāñcīpuram Tirumalatatācārya lost all his riches.

The maṇḍapa is a square ; 12 columns face the eastern and western sides, 8 columns face the northern and southern ; besides these 96 columns 4 stand apart. On the 4th column of the north side, when coming from the west, is cut in solid stone, as the principal ornament of the column, a combat between soldiers. A trooper sits on horseback and a foot soldier aims with his firearm at his enemy. The maṇḍapa was erected about 1624 (the year being *tallakṣmīdyeśakhābde*).

4. In the precincts of the Tanjore temple are carved in stone on stone pillars opposite the " *Svarga ekadaśī*-gate sepoys with small carbines in their hands.

5. *In Pērūr*, a few miles from Coimbatore, is a celebrated Śiva temple and near it is a fine shrine, known as the Sabhāmaṇḍapa. On the base of its broad stone pillars stands a soldier with a gun in his hands. The date of the erection cannot be ascertained with exactness, and even popular belief does not ascribe to this maṇḍapa more than a few hundred years. As is usual with buildings in the south of the Dekkan Tirumala Nayak is occasionally named as its builder.

All these buildings, which, as we have seen, contain representations of firearms, are, according to our notions of antiquity, not very ancient, as, the Tirupallāṇi temple excepted, none of them is over 500 years old, but in judging the age of the subjects exhibited in the carvings of Indian temples, we should never lose sight of the fact that new subjects are not introduced in the architectural designs of the principal figures

in any Indian ecclesiastical building. No architect, no one who erects a sacred pagoda at his own cost, will dare to represent in the chief carving of a conspicuous part of a building, as a big stone column is no doubt, a subject which is new and with which his countrymen were not familiar in times of yore, or which are not mentioned in the Śilpaśāstra, or the works on arts. This is a custom which is well known to every learned Brahman, and which is observed even now. Occasionally one sees in temples and other buildings odd, nay, even very indecent groups; but these quaint figures, which are by the bye never central ones, fulfil a special object, namely, to catch the evil eye, and so to protect the structure from any mischievous consequences. Whenever a new private house is built, such a figure will be displayed somewhere in a conspicuous place, and is generally removed after it had been in its place for some time and thus fulfilled its object. I have been assured on good authority that the Marīcipaṭala, a very ancient work on architecture, contains a description of architectural designs relating to firearms, but though I have written for this work, I am afraid I shall get it too late to verify this statement.[136]

Under these circumstances I cannot agree with the statement contained in Fergusson's excellent "History of Indian and Eastern Architecture" (p. 370), that "the date of the porch at Peroor is ascertained within narrow limits by the figure of a sepoy loading a musket being carved on the base of one of its pillars, and his costume and the shape of his arm are exactly those we find in contemporary pictures of the wars of Aurungzebe, or the early Mahrattas, in the beginning of the 18th century." I do not deny that the Sabhāmāṇḍapa may be comparatively new, but the figure of the sepoy with a musket in his hand can in no way settle the age of the building. As to the remarks concerning the costume of the soldier, there is

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[136] *See* Lists of Sanskrit Manuscripts in Private Libraries of Southern India, No. 5,610, lately published by me.

nothing to prove that his dress belongs to any certain period, and considering that the Hindu, if conservative in any thing, is especially so in his food and his dress, there is much probability that the uniform of the sepoy has also not been altered much in subsequent times. Moreover it must not be overlooked that the dress, especially the head-dress or turban varies according to caste and locality.

This remark leads me to refute an assertion made with some authority by Mr. W. F. Sinclair in the *Indian Antiquary* of September 1878. It is in a critical notice on a few ślokas extracted, not quite correctly though, from the Śukranīti by Mr. Rām Dās Sen.[137] In verse 136 we read : " The breech at the vent carries stone and powder and has a machinery which produces fire when striking." Alluding to this śloka Mr. Sinclair says : " From the evidence above given, it seems to me that if they (those verses) are not such interpolations the whole work must be a forgery of, at best, the 17th century, a period which I am led to select by the mention of the flint." Does Mr. Sinclair want to insinuate by this, that the Hindus did not know flints, nor their peculiar properties ? It is hardly credible that a nation, which is so observant, should have overlooked objects of such common occurrence ; or, if it knew them, that it should not have applied them to some use. Is it not perhaps judging others too much according to our own proficiencies, to intimate that, if Europeans did not apply flints or flintlocks to guns before the 17th century, no body else could have done so ? There is scarcely anything so common, so well known in this country, as the qualities of the flint ; in fact the Hindus are adepts in any thing connected with the art of making fire.

In the sixth book of the Nītiprakāśikā are enumerated all the articles which a king should take with him when setting out for a military expedition. After mentioning all sorts of provisions and arms mention is also made in the 51st śloka

[137] *Indian Antiquary*, 1878, p. 136.

of the following things: "and also the cotton of the silk-cotton tree and iron joined with flint."[138] This suggests at once the ordinary Indian tinderbox commonly called Rāmasvāmī, from the figure of the idol on its top.

The word for "*flint*" is in Tamil *śakkimukki* or *śakimuki*, and in Telugu *cakimuki.* If these terms are not onomatopoëtic, imitating the sound when the flint is struck, they may be regarded as derivations (*tadbhavams*) from the Sanskrit *śikhāmukha*, flame-mouth.

I trust thus to have proved that gunpowder and firearms were known in India in the most ancient times, that the statement in the Śukranīti about powder is supported by the Nītiprakāśikā of Vaiśampāyana, and that the quotation from the Rājalakṣmīnārāyaṇahṛdaya, a part of the ancient Atharvaṇarahasya, is an additional proof of it. I contend further that the knowledge of making gunpowder was never forgotten in India; but, that it was not earlier known in Europe is partly due to the isolated position of India, and partly also to the want of saltpetre in Europe, which prevented European nations from discovering the oxydizing properties of saltpetre. Moreover it must not be forgotten, that the preparation of gunpowder, even after it had become known, was kept everywhere a deep secret. The ancient Hindus enjoyed a well-deserved reputation as skilful artificers in iron and steel, the manipulation of which metals requires a considerable amount of ability, and these circumstances go surely far enough to justify the conclusion that the ancient Hindus were as well able to prepare firearms as the modern Hindus are now-a-days.[138] I further believe to have proved through quotations from the Nītiprakāśikā, the Naiṣadha, and even by incidental evidence from Manu that firearms were well known in ancient times, though the

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[138] *See* Nītiprakāśikā, VI, 51; Śālmalītūlikām caiva vāpyaśmasārāśmasaṁyutām.—The *Rumpa* hillmen, *e.g.*, dig and smelt the iron-ore and cast it into musket-barrels.

interdict placed on them by Manu may have interfered somehow with their being generally used. On the other hand it must not be forgotten, that, though firearms existed, their construction was still in its infancy and that their application was very limited and did not diminish much the use of other arms. It ought also not to be overlooked that, as now, so also in ancient times, every thing connected with firearms and their improvement was surrounded with great mystery and the few books written on this subject were guarded like treasures and not communicated to the common crowd. The danger in handling firearms may also have deterred people from availing themselves of them so much as they otherwise would have done. Nevertheless the existence of guns and cannons in India in the earliest times seems to me to be satisfactorily proved from evidence supplied by some of the oldest Indian writings.

CHAPTER V.

ON THE ARMY ORGANISATION AND POLITICAL MAXIMS OF THE ANCIENT HINDUS.

THE SEVENTH SECTION OF THE FOURTH BOOK OF THE ŚUKRANĪTI.

1. Senā śastrāstrasaṁyuktamanuṣyādigaṇātmikā.
2. Svagamānyagamā ceti dvidhā, saiva pṛthak tridhā, daivyāsurī mānavī ca, pūrvapūrvābalādhikā ;

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1. An army is a numerous body consisting especially of men provided with weapons and missiles. Army.
2. It is of two kinds either self-moving or not self-moving; it is besides in a threefold manner an army either of gods, of demons or of human beings, each preceding being stronger than the succeeding.

3. Svagamā yā svayaṃgantrī, yānagā'nyagamā smṛtā ;
pādātam svágamam, cānyadrathāśvagajagam tridhā.
4. Sainyāt vinā naiva rājyam, na dhanam, na parākramaḥ.
5. Balino vaśagāḥ sarve durbalasya ca śatravaḥ
bhavantyalpajanasyāpi, nṛpasya tu na kim punaḥ.
6. Śārīram hi balam, śauryabalam, sainyabalam tathā
caturtham āstrikabalam, pañcamam dhībalam smṛtam,
ṣaṣṭam āyurbalam, tvetairupeto Viṣṇureva saḥ.
7. Na balena vinātyalpam ripum jetum kṣamāḥ sadā
devāsuranarāstvanyopāyairnityam bhavanti hi.
8. Balam eva ripornityam parājayakaram param
tasmāt balam abhedyam tu dhārayet yatnato nṛpaḥ.
9. Senābalam tu dvividham, svīyam maitram ca tad dvidhā,
maulasādyaskabhedābhyām, sārāsāram punardvidhā.

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3. It is called self-moving, if it moves itself; not self-moving if it moves on vehicles. Infantry is self-moving; the not self-moving army moves in three ways, on carriages, horses and elephants.

4. If there is no army, there is no government, no wealth, no power.

5. All become the subjects even of a man of humble birth if he is strong, all his enemies if he is weak; is this not more so in the case of a king?

6. There surely exists physical strength, bravery, likewise military strength, the fourth is the strength of weapons, the fifth is called intellectual power, the sixth is vital power; who is endowed with these is indeed another Viṣṇu.

7. By force alone are gods, demons and men ever able to conquer even a very weak enemy.

8. An army is truly always the best means for the defeat of an enemy, a king should therefore zealously maintain an inconquerable army.

9. An armed force is of two kinds, it is either one's own, or it belongs to an ally; each with its own classes of

10. Aśikṣitam śikṣitam ca, gulmībhūtam agulmakam,
dattāstrādi svaśastrāstram, svavāhi dattavāhanam.
11. Saujanyāt sādhakam maitram, svīyam bhṛtyā prapālitam,
maulam bahvabdānubandhi, sādyaskam yattadanyathā.
12. Suyuddhakāmukam sāram, asāram viparītakam,
śikṣitam vyūhakuśalam, viparītam aśikṣitam,
13. Gulmībhūtam sādhikāri, svasvāmikam agulmakam,
dattāstrādi svāminā yat, svaśastrāstram ato'nyathā.
14. Kṛtagulmam svayaṃgulmam, tadvacca dattavāhanam
āraṇyakam Kirātādi yat svādhīnam svatejasā.
15. Utsṛṣṭam ripuṇā vāpi bhṛtyavarge niveśitam
bhedādhīnam kṛtam śatroḥ sainyam śatrubalam smṛtam,
ubhayam durbalam proktam, kevalam sādhakam na tat.

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reserve and line, and these again are in a twofold manner divided into efficient and inefficient men.

10. It is either trained or not trained, formed or not formed into corps, provided or providing itself with arms, provided or providing itself with vehicles.

11. An allied army is useful when kindly treated, one's own is maintained by pay; the reserve is of many years' standing, the line differs in this respect.

12. The efficient is eager for a good fight, the inefficient is the reverse; the trained is clever in tactics, the untrained is the reverse.

13. The army formed in corps has a commander, that which is its own master is not well arranged in corps; the one has received arms from the king, the other which carries its own arms differs in this respect.

14. The forester corps, *i.e.*, the Kirātas and similar tribes, which is subdued by the power of the king, is formed into corps or has formed itself into corps, after having been supplied with vehicles.

15. The army of the enemy which was given up by the foe, or which having entered his service is won over by dissension, is still regarded as hostile; both are regarded as weak, and especially as not trustworthy.

16. Samairniyuddhakuśalairvyāyāmairnatibhistathā
vardhayet bāhuyuddārtham bhojyaiḥ śārīrakam balam.
17. Mṛgayābhistu vyāghrāṇām śastrāstrābhyāsataḥ sadā
vardhayet śūrasaṁyogāt saṁyak śauryabalam nṛpaḥ.
18. Senābalam subhṛtyā tu tapobhyāsaistathāstrikam
vardhayet śāstracaturasaṁyogāt dhībalam sadā.
19. Satkriyābhiścirasthāyi nityam rājyam bhavet yathā,
svagotre tu tathā kuryāt tat āyurbalam ucyate;
yāvat gotre rājyam asti tāvat eva sa jīvati.
20. Caturguṇam hi pādātam aśvato dhārayet sadā,
pañcamāṁśānstu vṛṣabhān aṣṭāṁśāñśca kramelakān;
21. Caturthāṁśān gajān uṣṭrāt, gajārdhāñśca rathānstathā
rathāt tu dviguṇam rājā bṛhannālikam eva ca.

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16. One should increase the physical strength for pugilistic combats by diet and by athletic exercises and wrestling with equals and with those who are experts in close fighting.

17. A king should always well encourage bravery by tiger-hunts, by practice with weapons and arms and through association with brave men.

18. He should keep up his military strength by good pay, but the strength of his weapons by penance and practice; and his intellectual power by having always intercourse with wise persons.

19. That his kingdom may always be long lasting in his family, he should effect by good deeds, this is called vital power; as long as the kingdom remains in his family, he lives indeed.

20. A king should always maintain four times as many foot-soldiers as horses, for every five horses one bull, for every eight horses one camel;

Proportion of different arms to each other.

21. for every four camels one elephant, for every two elephants one chariot, for every chariot two big guns.[139]

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[139] *See* pp. 170–172. The proportion of the different parts to each other is represented by 5 chariots, 10 elephants, 40 camels, 64 bulls, 320 horses, and 1,280 men.

22. Padātibahulam sainyam madhyāśvam tu gajālpakam
tathā vṛṣoṣṭrasāmānyam rakṣet nāgādhikam na hi.

23. Savayassāraveṣauca śastrāstram tu pṛthak śatam
laghunālikayuktānām padātīnām śatatrayam;

24. Aśītyaśvān ratham caikam bṛhannāladvayam tathā,
uṣṭrān daśa gajau dvau tu śakaṭau ṣoḍaśarṣabhān;

25. Tathā lekhakaṣaṭkam hi mantritritayam eva ca,
dhārayet nṛpatiḥ samyak vatsare lakṣakarṣabhāk.[140]

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22. He should keep an army with many foot-soldiers, with a moderate number of horses, but with few elephants; likewise with a small number of bulls and camels, but not with many elephants.

23. A prince, who gets a lac of karṣas a year, should maintain well with weapons and missiles respectively one hundred men, 300 foot-soldiers with small firearms, who are (all) equal in age, strength and dress;

24. eighty horses and one chariot; likewise two big guns; ten camels, two elephants, two waggons and sixteen bulls;

25. likewise also six clerks and certainly three ministers.

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[140] *See* Līlāvatī, śl. 2–4.

2. Varāṭakānām daśakadvayam yat sā kākiṇī tāśca paṇaścatasraḥ te ṣoḍaśa dramma ihāvagamyo drammaistathā ṣoḍaśabhiśca niṣkaḥ.

3. Tulyā yavābhyām kathitātra guñjā vallaistriguñjo dharaṇam ca te'ṣṭau gadyāṇakastaddvayam indratulyairvallaistathaiko dhaṭakaḥ pradiṣṭaḥ.

4. Dasārdhaguñjam pravadanti māṣam māṣāhvayaiṣṣoḍaśabhiśca karṣaḥ karṣaiścaturbhiśca palam tulā tacchatam suvarṇasya suvarṇasañjñam.

That is 20 *Varāṭakas* are 1 Kākiṇī, 4 *Kākiṇīs* 1 Paṇa, 16 *Paṇas* 1 Dramma, 16 *Drammas* 1 Niṣka. 2 *Yavas* are 1 Guñja, 3 *Guñjas* 1 Valla, 8 *Vallas* 1 Dharaṇa, 2 *Dharaṇas* 1 Gadyāṇaka and 14 Vallas 1 Dhaṭaka. Further 10½ *Guñjas* are 1 *Māṣa*, 16 Māṣas 1 *Karṣa*, 4 Karṣas 1 *Pala*, 100 Palas 1 *Tulā* and a Tulā is equal to a *Suvarṇa*.

26. Sambhāradānabhogārtham dhanam sārdhasahasrakam,
lekhakārthe śatam māsi mantryarthe tu śatatrayam ;
27. Triśatam dāraputrārthe vidvadarthe śatadvayam
sādyaśvapadagārtham hi rājā catussahasrakam ; 55
28. Gajoṣṭravṛṣanālārtham vyayīkuryāt catuśśatam
śeṣam kośe dhanam sthāpyam rājñā sārddhasahasrakam.
29. Prativarṣam svaveśārtham sainikebhyo dhanam haret.

Expenditure.

26. The king should spend on provisions, largesse and pleasure fifteen hundred karṣas, on clerks one hundred a month, but on ministers three hundred ;

27. on his wife and son three hundred, on learned men two hundred, on elephant-drivers, horses (cavalry) and foot-soldiers four thousand ;

28. on the straw for elephants, camels and bulls four hundred. The remaining money fifteen hundred karṣas should be deposited by the king in the treasury.[141]

29. The king should deduct every year a sum of money from the soldiers for their dress.

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[141] The 100,000 Karṣas will be expended as follows :—

	Per Mensem.	
Provisions, largesse and pleasure	1,500	Karṣas.
Clerks (one clerk at $16\frac{2}{3}$ K.)	100	,,
Ministers (one minister at 100 K.)	300	,,
Wife and family	300	,,
Learned men	200	,,
Elephant drivers, cavalry and infantry	4,000	,,
Straw	400	,,
Reserve funds	1,500	,,
Total ..	8,300	,,

or 99,600 Karṣas, *i.e.*, about a lac of Karṣas a year.

The title of a sovereign depends on the yearly income his country yields to him. A *Sāmanta* is called a prince who receives up to 3 lacs, a *Māṇḍalika* gets up to 10 lacs, a *Rāja* up to 20 lacs, a *Mahārāja* up to 50 lacs, a *Svarāṭ* up to a krore or ten millions, a *Saṁrāṭ* up to 10 krores, and a *Virāṭ* up to 25 krores. To a *Sārvabhauma* is subjected the whole earth with its seven islands.

30. Lohasāramayaḥ cakrasugamo, mañcakāsanaḥ,
svāndolāyitarūḍhastu, madhyamāsanasārathiḥ,
31. Śastrāstrasandhāryudara, iṣṭacchāyo, manoramaḥ,
evaṁvidho ratho rājñā rakṣyo nityam sadaśvakaḥ.
32. Nīlatālurnīlajihvo vakradanto hyadantakaḥ
dīrghadveṣī krūramadaḥ tathā pṛṣṭhavidhūnakaḥ.
33. Daśāṣṭonanakho mando bhūviśodhanapucchakaḥ
evaṁvidho' niṣṭagajo, viparītaḥ śubhāvahaḥ.
34. Bhadro, mandro, mṛgo, miśro gajo jātyā caturvidhaḥ.

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30. An iron-made carriage, well going on wheels, provided with a couch as a seat; on which is fixed a swing, with a charioteer on the middle seat; *Carriage.*

31. with an interior carrying weapons and missiles, giving agreeable shade, and (altogether) beautiful—such a carriage provided with good horses, should always be kept by the king.

32. An elephant with a dark blue palate, a dark blue tongue, a crooked tooth, toothless, which bears malice a long time, has fierce rut, waddles likewise with his hinder part; *Elephant.*

33. with ten or seven claws, is slow, which rubs the ground with his tail—such an elephant is undesirable, the opposite confers benefits.

34. The elephant is of four kinds according to its race; either a Bhadra (*propitious*), Mandra (*pleasing*), Mṛga (*deer*), or a Miśra (mixed).

See Śukranīti, I, 184–187.

184. Sāmantaḥ sa nṛpaḥ prokto yāvat lakṣatrayāvadhi
tadūrdhvam daśalakṣānto nṛpo māṇḍalikaḥ smṛtaḥ.
185. Tadūrdhvam tu bhavet rājā yāvat viṁśatilakṣakaḥ.
pañcāśat lakṣaparyanto mahārājaḥ prakīrtitaḥ
186. Tatastu koṭiparyantaḥ svarāṭ, samrāṭ tataḥ param
daśakoṭimito yāvat, virāṭ tu tadanantaram
187. Pañcāśat koṭiparyantaḥ, sārvabhaumastataḥ param
saptadvīpā ca pṛthivī yasya vaśyā bhavet sadā.

35. Madhvābhadantaḥ sabalaḥ samāngo vartulākṛtiḥ
sumukho' vayavaśreṣṭho jñeyo bhadra gajaḥ sadā.

36. Sthūlakukṣī siṁhadṛk ca bṛhattvāggalaśuṇḍakaḥ
madyamāvayavo dhīrghakāyo mandragajassmṛtaḥ.

37. Tanukaṇṭhadantakarṇaśuṇḍaḥ sthūlākṣa eva hi
suhrasvādharameḍhrastu vāmano mṛgasañjñakaḥ.

38. Eṣām lakṣmairvimilito gajo miśra iti smṛtaḥ ;
bhinnam bhinnam pramāṇam tu trayāṇām api kīrtitam.

39. Gajamāne hyaṅgulam syāt aṣṭabhistu yavodaraiḥ
caturviṁśatyaṅgulaistaiḥ karaḥ prokto manīṣibhiḥ;

40. Saptahastonnatirbhadre hyaṣṭahastapradīrghatā
pariṇāho daśakaraḥ udarasya bhavet sadā.

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35. The elephant which has honey-coloured teeth, is strong, well proportioned, has a globular shape, good head and excellent limbs, is always known as a Bhadra.

36. The elephant which has a huge belly, and a lion's eye, a thick skin, throat and trunk, middle-sized limbs, a long body, is styled Mandra.

37. The elephant which has a small neck, teeth, ears and trunk, a peculiarly big eye, but a very small underlip and membrum, and is dwarfish, is called Mṛga.

38. The elephant which is mixed with the marks of these three, is called Miśra. It is also mentioned, that these three elephants differ respectively in size.

39. An aṅgula (the breadth of a thumb), when applied for the measurement of an elephant, should consist exactly of eight corns, 24 such aṅgulas are declared by wise men to be an elephantine hand.

40. The height of a Bhadra is 7 cubits, its length 8 cubits, the circumference of its belly should always be 10 cubits.

41. Pramāṇam mandramṛgayorhastahīnam kramāt ataḥ
kathitam dairghyasāmyam tu munibhirbhadraman-
drayoḥ.

42. Bṛhadbhrūgaṇḍaphālastu dhṛtaśīrṣagatiḥ sadā
gajaḥ śreṣṭhastu sarveṣām śubhalakṣaṇasaṁyutaḥ.

43. Pañcayavāṅgulenaiva vājimānam pṛthak smṛtam,
catvāriṁśāṅgulamukho vājī yaścottamottamaḥ.

44. Ṣaṭtriṁśadaṅgulamukho hyuttamaḥ parikīrtitaḥ
dvātriṁśadaṅgulamukho madhyamaḥ sa udāhṛtaḥ.

45. Aṣṭāviṁśatyaṅgulo yo mukhe nīcaḥ prakīrtitaḥ ;
vājinām mukhamanēna sarvāvayavakalpanā.

46. Auccam tu mukhamānena triguṇam parikīrtitam.

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41. The size of a Mandra and Mṛga is respectively one cubit less ; though the length of a Mandra and Mṛga is by sages declared to be the same.

42. The best of all elephants is surely that, which has large brows, cheek and forehead, bears always its head firmly, and is endowed with auspicious marks.

43. By an aṅgula of only five barley grains is the equine measure separately recorded. A horse whose head is 40 aṅgulas (long) is regarded as the very best. Horse.

44. A horse whose head is 36 aṅgulas long is surely considered a very fair one ; a horse whose head is 32 aṅgulas long is declared to be a middling one.

45. A horse whose head is 28 aṅgulas long is regarded as an inferior one. The proportion of all the limbs of a horse is measured by the length of the head.

46. The height is declared to be three times the length of the head.

47. Śiromaṇim samārabhya pucchamūlāntam eva hi
tritīyāṁśādhikam dairghyam mukhamānāt caturguṇam
pariṇāhastūdarasya triguṇastryaṅgulādhikaḥ.

48. Śmaśruhīnamukhaḥ kāntapragalbhōttuṅganāsikaḥ
dīrghoddhatagrīvamukho hrasvakukṣikhuraśrutiḥ;

49. Turapracaṇḍavegaśca haṁsameghasamasvanaḥ
nātikrūro nātimṛdurdevasatvo manoramaḥ;
sukāntigandhavarṇaśca sadguṇabhramarānvitaḥ.

50. Bhramarastu dvidhāvarto vāmadakṣiṇabhedataḥ
pūrṇo'pūrṇaḥ punardvedhā dīrgho hrasvastathaiva ca.

51. Strīpundehe vāmadakṣau yathoktaphaladau kramāt
na tathā viparītau tu śubhāśubhaphalapradau.

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47. The length beginning with the poll up to the very root of the tail is $1\frac{1}{3}$ of the height, or four times the length of the head, the circumference of the belly is three times the length of the head and three aṅgulas besides.

48. A horse which has a face without whiskers, is beautiful, courageous, has a high nose, a long and raised crest and head, a short belly, hoof and ear;

49. is impetuous and fast, neighs like a cloud or a goose (*haṁsa*), is neither too fierce nor too mild, is a pleasing *Devasatva* (godlike); it is of excellent beauty, flavour, and colour, and endowed with feathers of good qualities.

Feathers of the horse.

50. A feather is turned in two ways, either to the right or left, is full or not full, and is further in a two-fold manner either long or short.

51. The left-and right-side feathers of mares and stallions are respectively, as said, auspicious, but not thus, if they are on opposite sides; for they have then neither good nor bad consequences.

52. Nīcordhvatiryaṅmukhataḥ phalabhedo bhavet tayoḥ
śaṅkhacakragadāpadmavedisvastikasannibhaḥ ;
53. Prāsādatoraṇadhanussupūrṇakalaśākṛtiḥ
svastikasraṅmīnakhaḍgaśrīvatsābhaḥ śubho bhramaḥ.
54. Nāsikāgre lalāṭe ca śaṅkhe kaṇṭheca mastake
āvarto jāyate yeṣām te dhanyāsturagottamāḥ.
55. Hṛdi skandhe gale caiva kaṭideśe tathaiva ca
nābhau kukṣau ca pārśvāgre madhyamāḥ samprakīrtitāḥ.
56. Lalāṭe yasya cāvartadvitayasya samudbhavaḥ
mastake ca tṛtīyasya pūrṇaharṣo'yam uttamaḥ.
57. Pṛṣṭhavaṁśe yadāvarto yasyaikaḥ samprajāyate
sakarotyaśvasaṅghātān svāminaḥ sūryasañjñakaḥ.
58. Trayo yasya lalāṭasthā āvartāstiryaguttarāḥ
trikūṭaḥ sa parijñeyo vājī vṛddhikaraḥ sadā.

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52. There will be a difference in efficiency according as its mouth is low, high or oblique. If the feather is like a shell, wheel, club, lotus, altar, portico;

53. like an upper story, arch, bow, well-filled pitcher, like a triangle, chaplet, fish, sword, a mole on the breast, it is a lucky feather.

54. The horses on whose tip of the nose, forehead, temple, throat or skull exists a feather, are the best.

55. Those horses are regarded as middling, which have it on the heart, shoulder, neck, likewise on the hips, on the navel, belly and foreribs.

56. That horse is the best *Pūrṇaharṣa* (fulljoy) on whose temple rises a double feather, and on whose skull rises a third.

57. That horse on whose backbone rises one feather, is called *Sūrya* (sun) and procures to his master masses of horses.

58. That horse on whose forehead stand three oblique feathers, is called *Trikūṭa* (threepeaked) and it gives always prosperity to its master.

59. Evam eva prakāreṇa trayo grīvam samāśritāḥ
samāvartāḥ sa vājīśo jāyate nṛpamandire.
60. Kapolasthau yadāvartau dṛśyete yasya vājinaḥ
yaśovṛddhikarau proktau rājyavṛddhikarau matau.
61. Eko vātha kapolastho yasyāvartaḥ pradṛśyate
sarvanāmā sa vikhyātaḥ sa icchet svāminiāśanam.
62. Gaṇḍasaṁstho yadāvarto vājino dakṣiṇāśritaḥ
sa karoti mahāsaukhyam svāminam śivasañjñikaḥ.
63. Sahṛidvāmāśritaḥ krūraḥ prakaroti dhanakṣayam
indrākṣau tāvubhau śastau nṛparājyavivṛddhidau.
64. Karṇamūle yadāvartau stanamadhye tathā parau
vijayākhyau ubhau tau tu yuddhakāle yaśaḥpradau.
65. Skandhapārśve yadāvartau sa bhavet padmalakṣaṇaḥ
karoti vividhān padmān svāminaḥ santatam sukham.

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59. That is the best horse in the King's palace, on whose neck are also placed three feathers in such a manner.

60. The two feathers which on a horse's cheeks are seen standing, are called augmentors of fame and are esteemed as augmentors of kingship.

61. A horse, on whose left cheek is observed a feather standing, is called *Sarvanāmā*, and it may wish for the destruction of its master.

62. The horse on whose right cheek stands a feather renders his master very happy, it is called *Śiva* (prosperous).

63. That bad (feather) on the left side of the heart produces loss of wealth, the two excellent *Indrākṣa* (Indra's eyes) increase the kingdom of the king.

64. A horse which has two feathers on the root of the ear, or which has also two on the middle of the breast; these both are called *Vijaya* (victory) and give glory in time of war.

65. A horse, which has two feathers on the shoulderblade, should be called *Padma* (wealth), it gives many virtues and continual happiness to its master.

66. Nāsāmadhye yadāvarta eko vā yadi vā trayam
cakravartī sa vijñeyo vājī bhūpālasañjñikaḥ.
67. Kaṇṭhe yasya mahāvarta ekaḥ śreṣṭhaḥ prajāyate
cintāmaṇiḥ sa vijñeyaḥ cintitārthasukhapradaḥ.
68. Śuklākhyau phālakaṇṭhasthau āvartau vṛddikīrtidau.
69. Yasyāvartau vakragatau kukṣyante vājino yadi,
sa nūnam mṛtyum āpnoti kuryāt vā svāminā́śanam.
70. Jānusaṁsthā yadāvartāḥ pravāsakleśakārakāḥ,
vājimeḍhre yadāvarto vijayaśrīvināśanaḥ.
71. Trikasaṁstho yadāvartaḥ trivargasya praṇāśanaḥ
pucchamūle yadāvarto dhūmaketuranarthakṛt,
guhyapucchatrikāvartī sa kṛtāntabhayapradaḥ.

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66. According as there is one feather or there are three feathers on the midst of the nose, the horse is called *Cakravartī* or *Bhūpāla*.

67. The horse on whose throat is one very good large feather, is called *Cintāmaṇi*, bestowing every imaginary happiness and wealth.

68. Two feathers, which stand on the forehead and throat (and are) called *Śukla* (bright), give fame and prosperity.

69. If at the extremity of the belly of a horse are two curved feathers, that will surely incur death or cause the destruction of its master.

70. If there are feathers on the knees, they cause troubles and sojournings ; if a feather is on the penis of a horse, it ruins victory and prosperity.

71. If a feather stands on the lower spine it is the destroyer of three things,[142] if the feather *Dhūmaketu* (comet) is on the root of the tail, it produces trouble ; a horse which has a feather on the anus, tail and lower spine causes fear of death.

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[142] Dharma, artha, kāma.

72. Madhyadaṇḍā pārśvagamā saiva śatapadī kace
atiduṣṭāṅguṣṭhamitā dīrghāduṣṭā yathā yathā.

73. Aśrupātahanugaṇḍahṛdgalaprōthavastiṣu
kaṭiśaṅkhajānumuṣkakakunnābhigudeṣu ca ;
dakṣakukṣau dakṣapāde tvaśubho bhramaraḥ sadā.

74. Galamadhye pṛṣṭhamadhye uttaroṣṭhe' dhare tathā,
karṇanetrāntare vāmakukṣau caiva tu pārśvayōḥ
ūruṣu ca śubhāvarto vājinām agrapādayoḥ.

75. Āvartau sāntarau phāle sūryacandrau śubhapradau
militau tau madhyaphalau hyatilagnau tu duṣphalau.

76. Āvartatritayam phāle śubham cordhvam tu sāntaram
aśubham cātisaṁlagnam āvartadvitayam tathā.

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72. If the feather is in the midst formed like a stick, is turned towards the sides, is on the head, it is a *Śatapadī;* it is very bad if it is a thumb broad, in proportion as it is long it is good.

73. If a feather is on the place where the tears fall, on the cheek, jaw, heart, neck and abdomen, on the buttock, temple, knee, penis, hump, navel and anus, if on the right belly, on the right foot, that is always an unlucky feather.

74. A good horse-feather is on the middle of the neck, on the middle of the back, on the upperlip, likewise on the underlip, between eye and ear, on the left belly, on the two sides, on the loins and on the frontlegs.

75. Two feathers apart on the forehead, *Sūryacandrau* (sun and moon) give luck, if not apart they are pretty good, but surely unlucky, if much mixed.

76. Three perpendicular and apart standing feathers on the forehead are lucky, but two (similar) much mixed feathers are unlucky.

77. Trikoṇatritayam phāle āvartānām tu duḥkhadam
galamadhye śubhaḥ tvekaḥ sarvāśubhanivāraṇaḥ.

78. Adhomukhaḥ śubhaḥ pāde phāle cordhvamukho bhramaḥ
nacaivātyaśubhā pṛṣṭhamukhī śatapadī matā.

79. Mēḍhrasya paścāt bhramarī stanī vājī sa cāśubhaḥ,
bhramaḥ karṇasamīpe tu śṛṅgī caikaḥ sa ninditaḥ.

80. Grīvōrdhvapārśve bhramarī hyekaraśmiḥ sa caikataḥ
pādordhvamukhabhramarī kilōtpāṭī sa ninditaḥ.

81. Śubhāśubhau bhramau yasmin sa vājī madhyamaḥ smṛtaḥ
mukhe patsu sitaḥ pañcakalyāṇośvaḥ sadā mataḥ.

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77. Three triangular feathers on the forehead are unlucky; but one lucky feather on the middle of the neck, suspends all bad ones.

78. A feather on the foot with its face downwards, and one on the forehead with its face upwards, is lucky, but the *Śatapadī* is not regarded as very lucky, if it is turned towards the back.

79. If the feather is a *Stanī* (having a nipple) behind the penis, the horse is also unlucky, but if the feather is a *Śṛṅgī* (horned) near the ear, it is blamed.

80. The feather *Ekaraśmi* (having one string) on one side on the upper part of the neck, (and) the feather *Kīlotpāṭī* (*destroying bolts*) on the foot with its face upwards is despised.

81. The horse in which are lucky and unlucky feathers is a *Madhyama* (middling), that which is white on the head and feet is always esteemed as a *Pañcakalyāṇa* (excellent for five things).

82. Sa eva hṛdaye skandhe pucche śveto'ṣṭamaṅgalaḥ,
karṇe śyāmaḥ śyāmakarṇaḥ sarvataḥ tvekavarṇabhāk.
83. Tatrāpi sarvataḥ śveto medhyaḥ pūjyaḥ sadaiva hi,
vaiḍūryasannibhe netre yasya sto jayamaṅgalaḥ.
84. Miśravarṇaḥ tvekavarṇaḥ pūjyaḥ syāt sundaro yadi.
85. Kṛṣṇapādo hayo nindyaḥ tathā śvetaikapādapi
rūkṣo dhūsaravarṇaśca gardhabhābho'pi ninditaḥ.
86. Kṛṣṇatāluḥ kṛṣṇajihvaḥ kṛṣṇoṣṭhaśca vininditaḥ
sarvataḥ kṛṣṇavarṇo yaḥ pucche śvetaḥ sa ninditaḥ.
87. Suśvetaphālatilako viddho varṇāntareṇa ca
sa vājī dalabhañjī tu yasya so'pyatininditaḥ.

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82. The horse which is white on the heart, shoulder and tail is an *Aṣṭamaṅgala* (excellent for eight things), that, which has a black ear and only one other color (besides) is a *Śyāmakarṇa* (black ear).

83. That which except there (the black ear) is totally white, is always to be worshipped as a *Medhya* (sacrificial), that whose eyes are like a turquoise is a *Jayamaṅgala* (excellent for victory).

84. Whether a horse has different colours or has one colour it should always be esteemed, if it is beautiful.

85. A horse with a black foot is despisable, likewise if it has only one white foot, one which is rough and is grey-coloured is always blamed as looking like a donkey.

86. A horse with a black palate, black tongue and black lip is despised; a horse which is everywhere black but is white at the tail is blamed.

87. That horse which has on its forehead a very white mark, which is perforated by another colour is a *Dalabhañjī* (Piece breaking) and its owner is also much blamed.

88. Saṁhanyāt varṇajān doṣān snigdhavarṇo bhavet yadi;
baladhikaśca sugatirmahān sarvāṅgasundaraḥ,
nātikrūraḥ sadā pūjyo bhramādyairapi dūṣitaḥ.
89. Pariṇāho vṛṣamukhāt udare tu caturguṇaḥ
sa kakut triguṇoccam tu sārdhatriguṇadīrghatā.
90. Saptatālo vṛṣaḥ pūjyo guṇairetairyuto yadi
na sthāyī na ca vai mandaḥ suvoḍhā hyaṅgasundaraḥ,
nātikrūraḥ supṛṣṭhaḥ ca vṛṣabhaḥ śreṣṭha ucyate.
91. Triṁśadyojanagantā vā pratyaham bhāravāhakaḥ
daśatālaśca[143] sudṛḍhaḥ sumukhoṣṭraḥ praśasyate.
92. Śatam āyurmanuṣyāṇām gajānām paramam smṛtam
manuṣyagajayorbālyam yāvat viṁśativatsaram.

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88. If however the colour is agreeable it suspends all faults arising from colour; and a horse which is very strong, goes well, is large, beautiful in all its limbs, not very fierce is always to be honoured, even if spoiled by feathers.

89. The circumference of the belly is four times the size of a bull's head, three times its size is the height and three and a half times its length. Bull.

90. A bull which is seven spans high, if provided with good qualities, is to be respected. A bull which does neither stop, nor is slow, carries well, is moreover beautiful in limbs, is not very fierce, has a good back; is called the best bull.

91. A camel, which goes daily thirty yojanas while carrying loads, is ten spans high, very strong and has a fine head, is praised. Camel.

92. A hundred years is recorded as the longest life of men and elephants, the youth of men and elephants is reckoned up to twenty years. Age of men and elephants.

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[143] "navatālaśca" is a different reading in one MS.

93. Nṛṇām hi madhyamam yāvat ṣaṣṭivarṣam vayassmṛtam
aśītivatsaram yāvat gajasya madhyamam vayaḥ.
94. Catustriṁśat tu varṣāṇām aśvasyāyuḥ param smṛtam
pañcaviṁśati varṣam hi param āyurvṛṣoṣṭrayoḥ.
95. Bālyam aśvavṛṣoṣṭrāṇām pañcasaṁvatsaram matam
madhyamam yāvat ṣōḍaśābdam vārdhakyam tu tataḥ param.
96. Dantānām udgamairvarṇairāyurjñeyam vṛṣāśvayoḥ
aśvasya ṣaṭ sitā dantāḥ prathamābde bhavanti hi.
97. Kṛṣṇalohitavarṇāstu dvitīye'bde hyadhogatāḥ,
tṛtīye'bde tu sandaṁśau madhyamau patitodgatau.
98. Tatpārśvavartinau tau tu caturthe punarudgatau,
antyau dvau pañcamābde tu sandaṁśau punarudgatau.

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93. The middle age of men is estimated to last up to sixty years, the middle age of an elephant up to eighty years.

94. On the other hand thirty-four years are considered as the utmost age of horses, while twenty-five years are surely the highest age of bulls and camels. *Age of horses.*

95. The youth of horses, bulls and camels extends up to five years, the middle age up to sixteen years, but afterwards is old age. *Age of bulls and camels.*

96. By the growth and colour of the teeth the age of bulls and horses can be known. Six white teeth are surely in the first year of a horse, *Teeth of horses.*

97. but in the second year the lower teeth become dark red coloured, in the third year the middle biters fall out and come again ;

98. in the fourth year those two on their sides fall out and come again, in the fifth year the two biters at the end fall out and come again ;

99. Madhyapārśvāntagau dvau dvau kramāt kṛṣṇau ṣaḍ-abdataḥ;
navamābdāt kramāt pītau tau sitau dvādaśābdataḥ.
100. Daśapañcābdataḥ tau tu kācābhau kramataḥ smṛtau
aṣṭādaśābdataḥ tau hi madhvābhau bhavatah kramāt.
101. Śaṅkhābhau caikaviṁśābdāt caturviṁśābdataḥ sadā
chidram sañcalanam pāto dantānām ca trike trike.
102. Prothe suvalayastisraḥ pūrṇāyuryasya vājinaḥ,
yathā yathā tu hīnāstā hīnam āyustathā tathā.
103. Jānūtpāto tvoṣṭhavādyo dhūtapṛṣṭho jalāsanaḥ
gatimadhyāsanaḥ pṛṣṭhapātī paścādgamordhvapāt.
104. Sarpajihvo rūkṣakāntirbhīruraśvo'tininditaḥ,
sacchidraphālatilako nindya āśrayakṛt tathā.

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99. from the sixth year the two middle, side and end teeth become gradually black, each pair becomes in its turn yellow from the ninth year; and white from the twelfth year.

100. From the fifteenth year each pair is said to become in its turn glass-coloured, from the eighteenth each pair becomes by degrees honey-coloured;

101. from the twenty-first year each pair becomes shell-coloured, from the twenty-fourth each pair becomes in each third year hollow (24th–26th year), shaky (27th–29th), and falls out (30th–32nd).

102. The horse which has three deep wrinkles in the nostrils has a long life; in proportion as the wrinkles are deficient the life is also limited.

103. A horse which jumps up on its knees, makes a noise with its lips; sits down in water, stands still in the midst of the road, falls on its back, jumps upwards while going backwards,

104. which has a tongue like a serpent, is of disagreeable colour, and timid is much despised; despised is also a horse whose mark on the forehead has flaws and which stands often still.

105. Vṛṣasyāṣṭau sitā dantāḥ caturthe'bde'khilāḥ smṛtāḥ,
dvāvantyau patitotpannau pañcame'bde hi tasya vai.
106. Ṣaṣṭhe tūpāntyau bhavataḥ saptame tatsamīpagau,
aṣṭame patitotpannau madhyamau daśanau khalu.
107. Kṛṣṇapītasitaraktaśaṅkhacchāyau dvike dvike
kramāt hi dve ca bhavataḥ calanam patanam tataḥ.
108. Uṣṭrasyoktaprakāreṇa vayojñānam tu vā bhavet.
109. Prerakākarṣakamukho'ṅkuśo gajavinigrahe
hastipakairgajastena vineyassugamāya hi.
110. Khalīnasyordhvakhaṇḍau dvau pārśvagau dvādaśāṅgulau
tatpārśvāntargatābhyām tu sudṛḍhābhyām tathaiva ca.

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105. Eight complete white teeth are mentioned as existing in the fourth year of the bull, in its fifth year two molars fall out and rise again ; *Teeth of a bull.*

106. in the sixth year the two next to the molars, in the seventh the two next ones, in the eighth year the two middle biters fall and come again.

107. Every second year they get by degrees black, yellow, white, red and shell-coloured. Each pair becomes gradually loose and falls out.[144]

108. The knowledge of the age of a camel may be likewise reckoned according to the above-mentioned rule. *Age of a camel.*

109. For training an elephant a hook is used by the elephant-drivers, which has one point for driving on and another for drawing back ; by this hook the elephant is guided to go well. *Elephant-training.*

110. The two upwards and sideways pointing parts of a bridle-bit are respectively on the whole twelve aṅgulas long, with two inside but very strong pieces, *Bridle.*

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[144] Black in the 9th and 10th year, yellow in the 11th and 12th, white in the 13th and 14th, red in the 15th and 16th, shell-coloured in the 17th and 18th, in the 19th the end teeth get loose, in the 20th the end teeth fall out and the last but one become loose, &c. &c.

111. Vārakākarṣakhaṇḍābhyām rajvarthavalayair yutau
evaṁvidhakhalīnena vaśīkuryāt tu vājinam.
112. Nāsikākarṣarajvā tu vṛṣoṣṭram vinayet bhṛśam
tīkṣṇāgro yaḥ saptaphālaḥ syāt eṣām malaśodhane.
113. Sutāḍanairvineyā hi manuṣyāḥ paśavaḥ sadā,
sainikāstu viśeṣeṇa na te vai dhanadaṇḍataḥ.
114. Anūpe tu vṛṣāśvānām gajoṣṭrāṇām tu jāṅgale
sādhāraṇe padātīnām niveśāt rakṣaṇam bhavet.
115. Śatam śatam yojanānte sainyam rāṣṭre niyojayet.
116. Gajoṣṭravṛṣabhāśvāḥ prāk śreṣṭhāḥ sambhāravāhane ;
sarvebhyaḥ śakaṭāḥ śreṣṭhā varṣākālam vinā smṛtāḥ.
117. Na cālpasādhano gacchet api jetum ripum laghum
mahatātyantasādyaskabalenaiva subuddhiyuk.

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111. and are joined with rings for reins both for stopping and pulling back ; with such a bridlebit one may manage a horse.

Bullrein.

112. One may guide firmly a bull with a rein pulling through its nose, in cleaning them of dirt should be (used) an instrument with seven sharp-pointed combs.

113. Men and beasts should certainly always be managed by severe beating ; but soldiers specially ; they should not be subjected to fines.

114. By keeping horses and bulls in a marshy country, elephants in a jungle (and) foot-soldiers in a plain, their safety will be ensured.

Distribution of troops.

115. At the end of each yojana,[145] a king should keep in his inhabited kingdom a troop of one hundred soldiers.

116. Elephants, camels, bulls and horses are in the order of precedence excellent for carrying provisions, better than all these are stated to be cars, except in the rainy season.

Precepts on fighting and ruling.

117. A wise general should not march even against a weak enemy insufficiently prepared, but only with a very numerous army consisting of troops of the line.

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[145] A *yojana* is a measure of different length, its shortest extent amounts to 2½ and its longest to about 18 English miles ; it is generally fixed at 4 krośas or 9 English miles.

118. Aśikṣitam asāram ca sādyaskam tūlavacca tat,
yuddham vinā'nyakāryeṣu yojayet matimān sadā.

119. Vikartum yatate'lpo'pi prāpte prāṇātyaye'niśam
na punaḥ kimtu balavān vikārakaraṇakṣamaḥ.

120. Apibahubalo'śūro na sthātum kṣamate raṇe
kim alpasādhano'śūraḥ sthātum śakto'riṇā samam?

121. Susiddhālpabalaśśūro vijetum kṣamate ripum,
mahāsusiddhabalayuk śūraḥ kim na vijeṣyati.

122. Maulaśikṣitasāreṇa gacchet rājā raṇe ripum
prāṇātyaye'pi maulam na svāminam tyaktum icchati.

123. Vāgdaṇḍaparuṣeṇaiva bhṛtihrāsena bhītitaḥ
nityam pravāsāyāsābhyām bhedo'vaśyam prajāyate.

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118. An undisciplined and inefficient line is (weak) like cotton; a wise man should always apply it to all other purposes but fighting.

119. A weak person, if he is in danger of his life, tries always to fight, how much more a strong one, who is able to attack?

120. A coward though he has a very strong army cannot stand in the battle-field, how can a coward with small support stand in a battle?

121. A hero who has a small but well-disciplined army is able to conquer the enemy; (if so) will not a hero with a strong well-provided army conquer?

122. A king should go to battle against an enemy with an efficient and disciplined reserve, the reserve does not wish to leave his master even when in danger of death.

123. Discontent arises necessarily from severe reprimands and severe punishments, from fear, from reductions of pay, from always sojourning abroad and from fatigues.

124. Balam yasya tu sambhinnam manāk api jayaḥ kutaḥ
śatroḥ svasyāpi senāyā ato bhedam vicintayet.
125. Yathā hi śatrusenāyā bhedo'vaśyam bhavet tathā,
kauṭilyena pradānena drāk kuryāt nṛpatiḥ sadā.
126. Sevayātyantaprabalam natyā cārim prasādhayet
prabalam mānadānābhyām yuddhairhīnabalam tathā.
127. Maitryā jayet samabalam bhedaiḥ sarvān vaśam nayet,
śatrusaṁsādhanopāyo nānyaḥ subalabhedataḥ.
128. Tāvat paro nītimān syāt yāvat subalavān svayam
mitram tāvat ca bhavati puṣṭāgneḥ pavano yathā.
129. Tyaktam ripubalam dhāryam na samūhasamīpataḥ
pṛthak niyojayet prāk vā yuddhārtham kalpayet ca tat.

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124. How can be victory to him, whose army is even a little discontented? he should therefore always investigate the discontent which exists in his army and in that of his enemy.

125. That discontent should necessarily prevail among the hostile army, a king should always speedily endeavour by deceitful means and bribes.

Behaviour towards an enemy.

126. One should propitiate an overpowerful enemy by submission, a powerful one by demonstration of respect and by presents, and a weak one (one should subdue) by fighting.

127. He should win over an equal in strength by friendship; by divisions he should subdue all. There is no other means of subduing an enemy than by (spreading) discontent among his strong army.

128. As long as an enemy is powerful he is able to govern, and so long he is a friend; as the wind is (a friend) of the strong fire.

129. The hostile army which has deserted to the king must be protected, but not kept near his own army; he should place it separately or arrange it in front for fighting.

130. Maitryam ārāt pṛṣṭhabhāge pārśvayorvā balam nyaset.

131. Asyate kṣipyate yat tu mantrayantrāgnibhiśca tat
astram tadanyataḥ śastram asikuntādikam ca yat.

132. Astram tu dvividham jñeyam nālikam māntrikam tathā.

133. Yadā tu māntrikam nāsti nālikam tatra dhārayet
saha śastreṇa nṛpatirvijayārtham tu sarvadā.

134. Laghudīrghākāradhārabhedaiḥ śastrāstranāmakam
prathayanti navam bhinnam vyavahārāya tad vidaḥ.

135. Nālikam dvividham jñeyam bṛhatkṣudravibhedataḥ.

136. Tiryagūrdhvacchidramūlam nālam pañcavitastikam;
mūlāgrayorlakṣyabheditilabinduyutam sadā.

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130. He should place the friendly army near in the rear or on both sides.

131. Whatever is thrown or cast by incantation, machine or fire is a projectile, what is different is a weapon like the sword, the spear, &c. *Projectiles and weapons.*

132. The projectile weapon must be known to be of two kinds, that consisting of tubes and that thrown by incantation. *Incantation arms, guns, and other weapons.*

133. If here there are no incantation-arms a king should always keep for the sake of victory the tubular arms together with other weapons.

134. According as a new weapon and missile varies in its size, whether it is small or large, in its shape or blade, experts name it differently.

135. The tubular weapon should be known as being of two kinds, divided into large and small.

136. The tube is five spans long, its breech has a perpendicular and horizontal hole, at the breech and muzzle is always fixed a sesambead for aligning the sights. *Gun.*

137. Yantrāghātāgnikṛt grāvacūrṇadhṛk karṇamūlakam
sukāṣṭhopāṅgabudnam ca madhyaṅgulabilāntaram.

138. Svānte'gnicūrṇasandhātṛśalākāsaṁyutam dṛḍham
laghunālikam apyetat pradhāryam pattisādibhiḥ.

139. Yathā yathaitat tvaksāram yathā sthūlabilāntaram
yathā dīrghabṛhadgolam dūrabhedi tathā tathā.

140. Mūlakīlabhramāt lakṣyasamasandhānabhāji yat
bṛhannālīkasañjñam tat kāṣṭhabudhnavivarjitam
pravāhyam śakaṭādyaistu suyuktam vijayapradam.

141. Suvarcilavaṇāt pañca palāni gandhakāt palam
antardhūmavipakvārkasnuhyādyaṅgārataḥ palam ;

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137. The breech has at the vent a mechanism which, carrying stone and powder, makes fire by striking. Its breech is well wooded at the side, in the middle is a hole an aṅgula broad ;

138. after the gunpowder is placed inside, it is firmly pressed down with a ramrod. This is the small gun which ought to be carried by foot-soldiers.

139. In proportion as its outside (bark) is hard, its hole is broad, its ball is long and broad ; the ball reaches far.

140. A big tube is called (that gun) which obtains the direction of the aim by moving the breech with a wedge ; its end is without wood ; but it is to be drawn on cars, &c. ; if well welded it gives victory.

Gun-powder.

141. Five weights (pala) of saltpetre, one weight of sulphur, one weight of charcoal, which consists of *Calatropis gigantea*, of *Euphorbia neriifolia*, and other (plants) and is prepared in such a manner that the smoke does not escape ;

142. Śuddhāt saṅgrāhya sañcūrṇya sammīlya praputet rasaiḥ
snuhyarkāṇām rasonasya śoṣayet ātapena ca ;
piṣṭvā śarkaravat caitat agnicūrṇam bhavet khalu.
143. Suvarcilavaṇāt bhāgāḥ ṣaṭ vā catvāra eva vā
nālāstrārthāgnicūrṇe tu gandhāṅgārau tu pūrvavat.
144. Golo lohamayo garbhaguṭikaḥ kevalo'pi vā
sīsasya laghunālārthe hyanyadhātubhavo'pi vā.
145. Lohasāramayam vāpi nālāstram tvanyadhātujam
nityasammārjanasvaccham astrapātibhirāvṛtam.
146. Aṅgārasyaiva gandhasya suvarcilavaṇasya ca
śilāyā haritālasya tathā sīsamalasya ca.
147. Hiṅgulasya tathā kāntarajasaḥ karpurasya ca
jatornīlyāśca saralaniryāsasya tathaiva ca.

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142. if all this is taken after having been cleansed, is then powdered, and mixed together, one should squeeze it with the juice of *Calatropis gigantea*, *Euphorbia neriifolia* and *Allium sativum* and dry in the sun ; having ground this like sugar, it will certainly become gunpowder.

143. There may be six or even four parts of saltpetre in the gunpowder used for tubular arms, but the parts of sulphur and charcoal remain as before.

144. The ball is made of iron, and has either small balls in its inside or is empty ; for small tubular arms it should be of lead or of any other metal.

145. The tubular projectile weapon is either of iron or of another metal, it is every day to be rubbed clean, and covered by gunners.

146. With a similar greater or less proportion of charcoal, sulphur, and saltpetre, of realgar, of opiment and likewise of graphite ;

147. of vermilion, also of powder of magnetic iron oxide and of camphor, of lac, and of indigo and likewise of the pine gum (*Pinus longifolia*),

148. Samanyūnādhikhairaṁśairagnicūrṇānyanekaśaḥ
kalpayanti ca vettāraḥ candrikābhādimanti ca.

149. Kṣipanti cāgnisaṁyogāt golam lakṣe sunālagam.

150. Nālāstram śodhayet ādau dadyāt tatrāgnicūrṇakam;
niveśayet tat daṇḍena nālamūle yathā dṛḍham.

151. Tataḥ sugolakam dadyāt tataḥ karṇe'gnicūrṇakam,
karṇacūrṇāgnidānena golam lakṣye nipātayet.

152. Lakṣyabhedī yathā bāṇo dhanurjyāviniyojitaḥ
bhavet tathānusandhāya dvihastaśca śilīmukhaḥ.

153. Aṣṭāśrā pṛthubudhnā tu gadā hṛdayasaṁhitā;
paṭṭiśaḥ svasamo hastabudhnaścobhayatomukhaḥ.

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148. experts make gunpowder in many ways and of white and other colours.

149. By the application of fire they throw the ball coming from the tube at the mark. Gun-ball.

150. One should clean the tube first and then put gunpowder, carry it down with the ramrod to the bottom of the tube till it is tight, About loading and cleaning a gun.

151. then put a good ball, and place gunpowder on the vent, and by setting fire to the powder at the vent discharge the ball towards its mark.

152. In order that the arrow despatched by the string of the bow should penetrate the object aimed at, the arrow which is put on should be two cubits long. Bow, arrow.

153. A club is octagonal, but broad at the end, rising (from the ground) up to the heart; a battle axe is of the same height (as the bearer), is in the middle one cubit broad and is double-headed. Club. Battle axe.

154. Īṣadvaktraścaikadhāro vistāre caturaṅgulaḥ
kṣuraprānto nābhisamo dṛḍhamuṣṭissucandraruk
khaḍgaḥ, prāsaścaturhastadaṇḍabudhnaḥ kṣurānanaḥ.
155. Daśahastamitaḥ kuntaḥ phālāgraḥ śaṅkubudhnakaḥ.
156. Cakram ṣaḍhastaparidhi kṣuraprāntam sunābhiyuk,
trihastadaṇḍaḥ triśikho, loharajjuḥ supāśakaḥ.
157. Godhūmasaṁhitasthūlapatram lohamayam dṛḍham,
kavacam saśirastrāṇam ūrdhvakāyaviśobhanam.
158. Tīkṣṇāgram karajam śreṣṭham lohasāramayam dṛḍham.
159. Yo vai supuṣṭasambhāraḥ tathā ṣaḍguṇamantravit
bahvastrasaṁyuto rājā yoddhum icchet sa eva hi,
anyathā duḥkham āpnoti svarājyāt bhraśyate' pi ca.

Sword.

154. The sword is a little curved, has one blade, is four aṅgulas broad, at the point sharp as a razor, reaches up to the navel, has a strong hilt and is as brilliant as the beautiful moon.

Broad sword.

The broad sword is four cubits long, broad (at the hilt), and at the end-point sharp like a razor.

Lance.

155. The lance is ten cubits long, ending in a (metal) point, and broad as a shaft.

Disk. Trident. Lasso.

156. The disk is six cubits in circumference, is at the edge like a razor and is to be handled in the very midst; the trident is three cubits long; a good lasso has iron strings.

Armour.

157. Armour consists of scales of the breadth of a grain of wheat, is of metal and firm, has a protection for the head, and is ornamented on the upper part of the body.

Gauntlet.

158. The fingertip of a gauntlet which is sharp at its end, is of metal and is strong, is surely the best.

Rules about fighting.

159. That king who has well supplied provisions, knows the secret of the six principles of policy (*see* śl. 174), and has many weapons, wishes certainly to fight; if he is not in such position (and fights), he experiences distress, and is even expelled from his kingdom.

160. Ābibhratoḥ śatrubhāvam ubhayoḥ saṁyatātmanoḥ
astrādyaiḥ svārthasiddhyartham vyāpāro yuddham ucyate.
161. Mantrāstrairdaivikam yuddham, nālādyaiśca tathā 'suram
śastrabāhusamuttham tu mānavam yuddham īritam.
162. Ekasya bahubhiḥ sārddham bahūnām bahubhiśca vā
ekasyaikena vā, dvābhyām dvayor vā, tat bhavet khalu.
163 Kālam deśam śatrubalam dṛṣṭvā svīyabalam tataḥ
upāyān ṣaḍguṇam mantram sambhūyāt yuddhakāmukaḥ.
164. Śaraddhemantaśiśirakālo yuddheṣu co'ttamaḥ
vasanto madhyamo jñeyo'dhamo grīṣmaḥ smṛtaḥ sadā.
165. Varṣāsu na praśaṁsanti yuddham sāma smṛtam tadā.

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160. The exertion of two self-controlled (parties) who harbour enmity against each other with projectile weapons and other arms for the accomplishment of their own benefit, is called war. *Definition of war.*

161. The fighting with incantations and projectile weapons is called divine, that with tubes and other instruments demoniac, that with weapons and the arms (of the body) is human. *Different mode of fighting.*

162. If one fights with many, or many fight against many, or one fights against one, or two against two, that is surely a contest.

163. Having considered the time, place, the hostile army and also his own, the (four) expedients (*i.e.*, negotiation, bribery, dissension and attack), the secret of the six principles of policy, he should think of war.

164. Autumn, winter and the chilly season are the best for fighting, spring time should be regarded as middling, and the hot season always as the worst. *Seasons of the year to be considered.*

165. In the rainy season they do not recommend war; for that time negotiation is advised.

166. Yuddhasambhārasampanno yadādhikabalo nṛpaḥ
manotsāhī suśakunotpātī kālaḥ tadā śubhaḥ.

167. Kārye'tyavaśyake prāpte kālo no cet yadā śubhaḥ
nidhāya hṛdi viśveśam gehe cihnam iyāt tadā.

168. Na kālaniyamaḥ tatra gostrīvipravināśane.

169. Yasmin deśe yathākālam sainyavyāyāmabhūmayaḥ
parasya viparītāśca smṛto deśaḥ sa uttamaḥ.[146]

170. Ātmanaśca pareṣām ca tulyavyāyāmabhūmayaḥ
yatra madhyama uddiṣṭo deśaḥ śāstravicintakaiḥ.[147]

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166. When a king has acquired all war materials, is very strong, persevering in his mind, (and) has obtained auspicious omens, then is the time.

167. But if the business is unavoidable, and the time is not propitious, he should go, after having meditated in his mind on the Supreme Spirit and placed a (divine) symbol in his house.

Unavoidable war to be accepted.

168. There is no restriction as to time (for fighting) when cows, women, and Brahmans are being destroyed.

169. That position in which there are at the necessary time fields fit for the manœuvring of troops, the position of the enemy being in this respect different, is mentioned as the best.

Manœuvring.

170. If his own good manœuvring fields and those of his enemies are equally good, the position is called a middling one by war experts.

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[146] *See* Kāmandakīya, XVI, 19.

[147] *See* Kāmand., XVI, 20.
Ātmanaśca pareṣām ca tulyā vyāyāmabhūmayaḥ
sumadhyamaḥ sa uddiṣṭo deśaḥ śastrārthacintakaiḥ.

171. Arātisainyavyāyāmasuparyāptamahītalaḥ
ātmano viparītaśca sa vai deśo'dhamaḥ smṛtaḥ.[148]

172. Svasainyāt tu tritīyāṁśahīnam śatrubalam yadi
aśikṣitam asāram vā sādyaskam svajayāya vai.

173. Putravat pālitam yat tu dānamānavivarddhitam
yuddhasambhārasampannam svasainyam vijayapradam.

174. Sandhim ca vigraham yānam āsanam ca samāśrayam
dvaidhībhāvam ca saṁvidyāt mantrasyaitānstu ṣaḍguṇān

175. Yābhiḥ kriyābhiḥ balavān mitratām yāti vai ripuḥ
sā kriyā sandhirityuktā vimṛśet tām tu yatnataḥ.

176. Vikarṣitaḥ san vādhīno bhavet śatrustu yena vai
karmaṇā vigraham tam tu cintayet mantribhirnṛpaḥ.

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171. If the ground is favorable for the manœuvres of the army of the enemy, his position being quite the reverse, that position is mentioned as the worst.

172. If the hostile army is a third part less than his own, if its line is undisciplined and inefficient, (such circumstances) ensure his own victory.

173. If his own army is guarded like a son, is gratified by presents and honours, is provided with the materials for war, it is conferring victory.

Six principles of policy.

174. He should understand the six principles of policy; alliance and quarrel, marching, halting, refuge and separation.

Alliance.

175. By what practices a strong enemy is won over to friendship, that practice is called alliance; he should consider it anxiously.

War.

176. A king should deliberate with his ministers about the war, by means of which his enemy may be injured and rendered dependent.

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[148] *See* Kāmand., XVI, 21.

177. Śatrunāśārthagamanam yānam svābhīṣṭasiddhaye
svarakṣaṇam śatrunāśo bhavet sthānāt tadāsanam.

178. Yairgupto balavān bhūyāt durbalo'pi sa āśrayaḥ,
dvaidhībhāvaḥ svasainyānām sthāpanam gulmagulmataḥ.

179. Balīyasābhiyuktastu nṛpo'nanyapratikriyaḥ
āpannaḥ sandhim anvicchet kurvāṇaḥ kālayāpanam.

180. Eka evopahārastu sandhireṣa mato hitaḥ,
upahārasya bhedāstu sarve'nye maitravarjitāḥ.[149]

181. Abhiyoktā balīyastvāt alabdhvā na nivartate
upahārādṛte yasmāt sandhiranyo na vidyate.[150]

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177. The going for the destruction of the enemy for the fulfilment of his own desires is marching; if through staying his own safety and his enemy's destruction is obtained, that is halting. *Marching.* *Halting.*

178. The protection which makes a weak man become strong, is called refuge; the placing of his own armies in different corps is separation. *Refuge.* *Separation.*

179. If a king is attacked by a strong enemy and is not able to resist, he should (thus) afflicted make peace, obtaining delay of time. *Political advice.*

180. Alliance alone is regarded as a pleasant tribute; but all the other kinds of tributes are destitute of friendship.

181. As an enemy who has not received any benefit from his superior strength does not return (to his country); therefore no peace is known without a tribute.

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[149] *See* Kāmand., IX, 21, and Hitopadeśa, IV, 126.

[150] *See* Kāmand., IX, 22.
Abhiyoktā balī yasmāt alabdhvā na nivartate
upahārāt ṛte tasmāt sandhiranyo na vidyate.

182. Śatrorbalānusāreṇa upahāram prakalpayet
sevām vāpi ca svīkuryāt dadyāt kanyām bhuvam dhanam.
183. Svasāmantāñśca sandhīyāt maitreṇānyajayāya vai
sandhiḥ kāryo'pyanāryeṇa samprāpyotsādayet hi saḥ.
184. Saṅghātavān yathā veṇurnividaiḥ kaṇṭakairvṛtaḥ
na śakyate samucchettum veṇuḥ saṅghātavānstathā.[151]
185. Balinā saha sandhāya bhaye sādhāraṇe yadi,
ātmānam gopayet kāle bahvamitreṣu buddhimān.
186. Balinā saha yoddhavyam iti nāsti nidarśanam
prativātam hi na ghanaḥ kadācit api sarpati.[152]

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182. He should settle a tribute according to the strength of his enemy, or he should agree to do homage, or should give his daughter, land or money.

183. For the sake of conquering his enemy he should make an alliance with his neighbours; an alliance is even to be made with an unworthy ruler; having gained his object he may destroy him.

184. As a clump of bamboos surrounded by thick thorns cannot be torn out, thus also could not be annihilated Veṇu (?) who had a multitude of followers.

185. A wise king who has many enemies should guard himself in calamity by making an alliance with a strong king, who is exposed to the same danger.

186. There exists no example (to show), that one should fight with a strong enemy; a cloud surely does not move against the wind.

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[151] *See* Hitop., IV, 26.
Saṁhatatvāt yathā Veṇurnividaḥ kaṇṭakairvṛtaḥ
na śakyate samucchettum bhrātṛsaṅghātavānstathā.
Pañc., III, 50. Saṅghātavān yathā veṇurnivido veṇubhirvṛtaḥ
na śakyate samucchettum durbalopi tathā nṛpaḥ.
Kāmandakīya, IX, 46.
Saṅghātavān yathā veṇurnividaiḥ kaṇṭakair vṛtaḥ
na śakyate samucchettum bhrātṛsaṅghātavānstathā.
All MSS. of the Śukranīti read *Veṇuḥ saṅghātavānstathā.*

[152] *See* Hitop., IV, 27; Pañcatantra, III, 22; Kāmandakīya, III, 46.

187. Balīyasi praṇamatām kāle vikramatām api
sampado na visarpanti pratīpam iva nimnagāḥ.
188. Rājā na gacchet viśvāsam sandhito' pi hi buddhimān
adrohasamayam kṛtvā vṛtram indraḥ purā'vadhīt.[153]
189. Āpanno' bhyudayākāṅkṣī pīḍyamānaḥ pareṇa vā
deśakālabalopetaḥ prārabheta ca vigraham.
190. Prahīnabalamitram tu durgastham hyantarāgatam
atyantaviṣayāsaktam prajādravyāpahārakam;
bhinnamantribalam rājā pīḍayet pariveṣṭayan.
191. Vigrahaḥ sa ca vijñeyo hyanyaśca kalahaḥ smṛtaḥ.
192. Balīyasātyalpabalaḥ śūreṇa na ca vigraham
kuryāt ca vigrahe puṁsām sarvanāśaḥ prajāyate.

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187. The power of those kings, who bow to a strong enemy, but fight at another time, does not glide away, as rivers do not flow against the stream.

188. A wise king does not enter into confidence even if he has made an alliance; Indra after having made friendship killed in ancient times Vṛtra.

189. When unfortunate, or hoping for success, or troubled by an enemy, one should commence war only, after having obtained the (right) place, time and army.

190. A king should beleaguer and oppress an enemy who is deficient in army and in friends, who stays in his fortress, who has invaded his country, who is much addicted to women, who robs his subjects of their money, and whose ministers and army are disaffected.

191. This is regarded as war, but a quarrel is regarded as a different thing.

192. A very weak one should not go to war with a strong enemy, for in such a combat of men occurs general destruction.

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[153] *See* Pañc., III. 7; Kāmand., IX. 50 to śloka 187; and Kāmand., IX. 53 to śloka 188.

193. Ekārthābhiniveśitvam kāraṇam kalahasya vā
upāyāntaranāśe tu tato vigraham ācaret.
194. Vigṛhya sandhāya tathā sambhūyātha prasaṅgataḥ
upekṣayā ca nipuṇairyānam pañcavidham smṛtam.[154]
195. Vigṛhya yāti hi yadā sarvān śatrugaṇān balāt
vigṛhya yānam yānajñaiḥ tadācāryaiḥ pracakṣyate.[155]
196. Arimitrāṇi sarvāṇi svamitraiḥ sarvato balāt
vigṛhya cāribhirgantum vigṛhyagamanam tu vā.[156]
197. Sandhāyānyatra yātrāyām pārṣṇigrāheṇa śatruṇā
sandhāyagamanam proktam tajjigīṣoḥ phalārthinaḥ.[157]

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193. If the cause of the quarrel is the desire to have one and the same object, one may proceed to war, if no other means exists (to settle the matter).

194. Five different modes of marching are mentioned by experts, a successful war march, an alliance march, a junction march, likewise an incidental march, and a contemptuous march. Marching.

195. If by his strength all hostile troops are conquered, it is called by the masters who know the marching rules, a successful war march.

196. If, when marching against one's own enemies, all the friends of the enemy are everywhere conquered through the ability of one's own friends, this is also called a successful war expedition.

197. When, while marching against one enemy, an alliance is made with another enemy, who is coming in his rear, this is called the alliance march of the king desirous success.

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[154] *See* Kāmand., XI, 2, instead of *upekṣayā ca* upekṣā ceti.
[155] *See* Kāmand., XI, 3.
[156] *See* Kāmand., XI, 4, instead of *ari* arer, and instead of *cāribhirgantum* "cābhigamanam."
[157] *See* Kāmand., XI, 5.

198. Eko bhūpo yadaikatra sāmantaiḥ sāmparāyikaiḥ
śaktiśauryayutairyānam sambhūyagamanam hi tat.[158]

199. Anyatra prasthitaḥ saṅgāt anyatraiva ca gacchati
prasaṅgayānam tat proktam yānavidbhiśca mantribhiḥ.[159] 395

200. Ripum yātasya balinaḥ samprāpya vikṛtam phalam
upekṣya tasmin tadyānam upekṣāyānam ucyate.[160]

201. Durvṛtte' pyakulīne tu balam dātari rajyate
hṛṣṭam kṛtvā svīyabalam paritoṣyapradānataḥ.

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198. If a king marches against an enemy together with his warlike, powerful and valiant neighbours, that is called going together.

199. If, after having set out against one enemy, he marches by circumstances (compelled) against another enemy, this is called by those who understand marching and by ministers, an incidental march.

200. If, when a strong king marches against an (insignificant) enemy, an advantage not worth having has been obtained and this has been given up, this is called a march conducted with contempt.

201. An army is even attached to a bad and low born king if he is only liberal, having pleased his own army by gifts of presents. Liberality towards troops.

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[158] *Compare* Kāmandakīya, XI, 6.
Ekībhūya yadaikatra sāmantaiḥ sāmparāyikaiḥ
śaktiśaucayutairyānam sambhūyagamanam hi tat.

[159] *Compare* Kāmandakīya, XI, 9.
Anyatra prasthitaḥ saṅgāt anyatraiva ca gacchati
prasaṅgayānam tat proktam atra śalyo nidarśanam.

[160] *Compare* Kāmandakīya, XI, 10.
Ripum yātasya balinaḥ samprāpyāviṣkṛtam phalam
upekṣya tanmitrayānam upekṣāyānam ucyate.

202. Nāyakaḥ purato yāyāt pravīrapuruṣāvṛtaḥ
madhye kalatram kośaśca svāmī phalguca yaddhanam,[161]
dhvajinīm ca sadodyuktaḥ sa gopayet divāniśam.[162]
203. Nadyadrivanadurgeṣu yatra yatra bhayam bhavet
senāpatiḥ tatra tatra gacchet vyūhīkṛtairbalaiḥ.[163]
204. Yāyāt vyuhena mahatā makareṇa purobhaye;
śyenenobhayapakṣeṇa sūcyā vā dhīravaktrayā.[164]
205. Paścādbhaye tu śakaṭam pārśvayorvajrasañjñikam
sarvataḥ sarvatobhadram cakram vyālam athāpi vā;[165]
yathādeśam kalpayet vā śatrusenāvibhedakam.
206. Vyūharacanasaṅketān vādyabhāṣāsamīritān

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202. The commander-in-chief should go in front, surrounded by valiant men, in the midst should be the queen, the treasury, the king, and whatever ready money there is; and he should always zealously guard his army day and night.

203. Wherever, whether in a river, mountain, forest or fortress an alarm of the enemy (coming) arises, there should the general go with combined forces.

Different formations of troops.

204. If the alarm arises in front, he should march in an array resembling a crocodile, a double-winged hawk or a needle with a strong point.

205. A king should form if the alarm rises in the rear what is called a cart, if on the flanks a thunderbolt, if on all sides, an everywhere impregnable figure, a wheel and an elephant for the destruction of the hostile army according to the fitness of the place.

Signals.

206. No body except his own soldiers should know the intima-

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[161] *See* Hit., III, 70; Kāmand., XVIII, 45.
Nāyakaḥ purato yāyāt pravīrapṛtanāvṛtah
madhye kalatram svāmī ca kośaḥ phalgu mahaddhanam.

[162] *See* Kāmandakīya, XVIII, 43.

[163] *See* Kāmand., XVIII, 44; Hitop., III, 69; and compare Manu, VII, 188.

[164] *See* Kāmand., XVIII, 48.

[165] *See* Kāmand., XVIII, 49.
Paścādbhaye tu śakaṭam pārśvayorvajrasañjñitam
sarvataḥ sarvatobhadram bhayavyūham prakalpayet.

svasainikairvinā kopi na jānāti tathāvidhān,
niyojayet ca matimān vyūhān nānāvidhān sadā.

207. Aśvānām ca gajānām ca padātīnām pṛthak pṛthak
uccaiḥ saṁśrāvayet vyūhasaṅketān sainikān nṛpaḥ.

208. Vāmadakṣiṇasaṁstho vā madhyastho vāgrasaṁsthitaḥ
śrutvā tān sainikaiḥ kāryam anuśiṣṭam yathā tathā.

209. Sammīlanam prasaraṇam paribhramaṇam eva ca
ākuñcanam tathā yānam prayāṇam apayānakam;

210. Paryāyeṇa ca sāmmukhyam samutthānam ca luṇṭhanam
saṁsthānam cāṣṭadalavat cakravat golatulyakam;

211. Sūcītulyam śakaṭavat ardhacandrasamam tu vā
pṛthagbhavanam alpālpaiḥ paryāyaiḥ paṅktiveśanam;

212. Śastrāstrayordhāraṇam ca sandhānam lakṣyabhedanam
mokṣaṇam ca tathāstrāṇām śastrāṇām parighātanam.

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tions for the arrangement of troops, communicated by words or signals; and a wise man should always prescribe different formations.

207. A king should make his soldiers hear distinctly the formation-signals for the elephants, horses and foot-soldiers each separately;

208. whether he stands on the left or right, in the midst or is placed in front; the soldiers, when they hear these signals, should do according as they are taught.

209. They should concentrate, spread, wheel round, fall in, march, double and retreat; Manœuvres.

210. now face or rise and lie down on the ground, or stand like an octagon, like a wheel, like a ball;

211. like a needle, like a car, or like the halfmoon, skirmish in small numbers, form rows in regular order;

212. take up weapons and arms, aim at and hit the mark, discharge missiles and strike with weapons,

213. Drāk sandhānam punaḥ pāto graho mokṣaḥ punaḥ punaḥ;
svagūhanam pratīghātaḥ śastrāstrapadavikramaiḥ.
214. Dvābhyām tribhiścaturbhirvā paṅktiśo gamanam tataḥ;
tathā prāgbhavanam cāpasaraṇam tūpasarjanam
apasṛtyāstrasiddhyartham upasṛtya vimokṣaṇam.
215. Prāgbhūtvā mocayet astram vyūhasthaḥ sainikaḥ sadā
āsīnaḥ syāt vimuktāstraḥ prāgvā cāpasaret punaḥ.
216. Prāgāsīnam tūpasṛto dṛṣṭvā svāstram vimocayet
ekaikaśo dviśo vāpi saṅghaśo bodhito yathā.
217. Krauñcānām khe gatiryādṛk paṅktitaḥ samprajāyate
tādṛk saṁrakṣayet krauñcavyūham deśabalam yathā,
218. Sūkṣmagrīvam madhyapuccham sthūlapakṣam tu paṅktitaḥ
bṛhatpakṣam madhyagalapuccham śyenam mukhe tanum.

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213. then quickly aim again, and throw, take up and discharge the arms repeatedly, cover themselves, and beat with arms, weapons and feet;

214. further go in rows of two, three or four; likewise, front, retire and change places; retire for adjusting the arms and advance for the discharge.

215. A soldier when standing in his corps should always discharge his arms from the front, if he has discharged the arms he should sit down, or should leave the front.

216. But (the next soldier) advancing should discharge his weapon keeping his eye on him who sits in front, either one by one, or in twos or in numbers, according to the order.

Formation of troops.

217. As the moving of the herons proceeds in the sky, he should arrange the herons' array, according as it is adapted to the country;

218. with a thin neck, a middling tail, a bulky wing, arranged

219. Catuṣpād makaro dīrghasthūlavakro dviroṣṭhakaḥ
sūcī sūkṣmamukho dīrghasamadaṇḍāntarandhrayuk.
220. Cakravyūhaḥ caikamārgo hyaṣṭadhā kuṇḍalīkṛtaḥ
caturdikṣvaṣṭaparidhiḥ sarvatobhadrasañjñikaḥ.
221. Amārgaścāṣṭavalayī golakaḥ sarvatomukhaḥ
śakaṭaḥ śakaṭākāro vyālo vyālākṛtiḥ sadā.
222. Sainyam alpam bṛhadvāpi dṛṣṭvā mārgam raṇasthalam
vyūhairvyūhena vyūhābhyām saṅkareṇāpi kalpayet.
223. Yantrāstraiḥ śatrusenāyā bhedo yebhyaḥ prajāyate,
sthalebhyasteṣu santiṣṭhet sasaīnyo hyāsanam hi tat.
224. Tṛṇānnajalasambhārā ye cānye śatrupoṣakāḥ
samyak nirudhya tān yatnāt paritaściram āsanāt.

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in rows, (and) a hawk-array with a broad wing, a middling throat and tail and thin at the face.

219. The crocodile has four feet, a long and broad snout and two lips. A needle has a thin face, a long and even stick-like body, and a hole at its end.

220. The wheel array has one way, but eight coils. A figure with eight rings and with four faces is called a *Sarvatobhadra* (a strong one on every direction).

221. A ball has no entrance, eight circles and everywhere a face; a cart is like a cart and an elephant has always the shape of an elephant.

222. Having seen the army, the road, the battlefield, whether small or big, he should arrange his army in many corps, or in one or two, or in one mass.

223. Where a gap may be made in the hostile army through missiles and machines, in these places the king should stand with his army; this is called post. Post.

224. Having with great exertion effectually removed from his post all round and for a long time to come grass, food, water and other provisions, which maintain the enemy;

225. Vicchinnavividhāsāram prakṣīṇayavasaindhanam,
vigṛhyamāṇaprakṛtim kālenaiva vaśam nayet.[166]
226. Areśca vijigīṣośca vigrahe hīyamānayoḥ
sandhāya yadavasthānam sandhāyāsanam ucyate.[167]
227. Ucchidyamāno balinā nirupāyapratikriyaḥ,
kulodbhavam satyam āryam āśrayeta balotkaṭam.
228. Vijigīṣostu sāhyārthāḥ suhṛtsambandhibāndhavāḥ
pradattabhṛtikā hyanye bhūpā aṁśaprakalpitāḥ.
229. Saivāśrayastu kathito durgāṇi ca mahātmabhiḥ.
230. Aniścitopāyakāryaḥ samayānucaro nṛpaḥ
dvaidhībhāvena varteta kākākṣivat alakṣitam,[168]
pradarśayet anyakāryam aṇyam ālambayet ca vā.

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225. he should subdue in time the enemy, whose various provisions are scattered, whose corn and fuel is destroyed and whose subjects are incensed.

226. If the enemy and the king who wishes to conquer are reduced in the war, the place where they stand, when they make peace, is called the place produced by peace.

227. If a king who has no means of redress is much oppressed by a strong king he should take refuge with a king, who is well-born, righteous, venerable and of superior strength. **Refuge.**

228. A king (who wishes to conquer) has friends, connections and relations who assist for the sake of friendship, others who have received pay, and kings on whom is settled a part (of the enemy's country).

229. By great-minded men this is surely called refuge and a fortress is also called a refuge.

230. A king, whose arrangements are not certain, looking out for the opportune time, should practise duplicity like the concealed eye of a crow, he should pretend one thing and seize another. **Duplicity.**

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[166] *See* Kāmand., XI, 16. [167] *See* Kāmand., XI, 17.
[168] *See* Kāmand., XI, 24b.

231. Sadupāyaiśca sanmantraiḥ kāryasiddhirathodyamaiḥ
bhavet alpajanasyāpi kim punarnṛpaterna hi.
232. Udyogenaiva siddhyanti kāryāṇi na manorathaiḥ.
233. Na hi suptamṛgendrasya nipatanti gajā mukhe[169] ;
ayo'bhedyam upāyena dravatām upanīyate.[170]
234. Lokaprasiddham evaitat vāri vahnerniyāmakam
upāyopagṛhītena tenaitat pariśoṣyate.[171]
235. Upāyena padam mūrdhni nyasyate mattahastinām[172]
upāyeṣūttamo bhedaḥ sadguṇeṣu samāśrayaḥ.
236. Kāryau dvau sarvadā tau tu nṛpeṇa vijigīṣuṇā,
tābhyām vinā naiva kuryāt yuddham rājā kadācana.

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231. The success of the undertaking of even an insignificant man may be ensured by clever stratagems, good councils and efforts, would this not be surely the case with a king?

Necessity of exerting oneself.

232. Undertakings really succeed by efforts alone and not by wishes.

233. Elephants certainly do not fall into the mouth of the sleeping lion. The iron which cannot be broken is brought by expedients to fluidity.

234. That the water is the subduer of the fire is surely well known in the world, but it is dried up by that fire if assisted by proper means.

235. The foot is placed on the wild elephant by stratagem. Among all expedients the division of friends is the best; amongst the six principles of policy the refuge is the best.

236. These two ought always to be used by a king who wishes to conquer; without these two no king could ever undertake a war.

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[169] *See* Hitop., 1, 36b.
na hi suptasya siṁhasya praviśanti mukhe mṛgāḥ.

[170] *See* Kāmand., XI, 47b.

[171] *See* Kāmand., XI, 49. *tenaiva* instead of *tenaitat.*

[172] *See* Kāmand., XI, 46b.

237. Parasparam prātikūlyam ripusenāpamantriṇām,
bhavet yathā tathā kuryāt tat prajāyāśca tat striyaḥ.

238. Upāyān ṣaḍguṇān vīkṣya śatroḥ svasyāpi sarvadā,
yuddham prāṇātyaye kuryāt sarvasvaharaṇe sati.

239. Strīviprābhyupapattau ca govināśepi brāhmaṇaiḥ,
prāpte yuddhe kvacinnaiva bhavet api parāṅmukhaḥ.

240. Yuddham utsṛjya yo yāti sa devairhanyate bhṛśam.

241. Samottamādhamai rājā tvāhūtaḥ pālayan prajāḥ,
na nivarteta saṅgrāmāt kṣatradharmam anusmaran.[173]

242. Rājānam cāpayoddhāram brāhmaṇam cāpravāsinam,
nirgilati bhūmiretau sarpo vilaśayān iva.[174]

General political advice.

237. He should contrive so that there is mutual enmity among the ministers and generals of the enemy and also among the subjects and women.

238. In case his life is in danger, or all his property is to be taken, he should fight having always considered the six-fold expedients of his enemy and of himself.

239. If he has undertaken the war for the defence of women and Brahmans and on account of the destruction of cows even if done by Brahmans, he should never turn away.

240. Who goes away having left the fight is quickly destroyed by the gods.

241. A king who protects his subjects if he is summoned to fight by equal, superior, or inferior enemies should not turn from the contest remembering the duty of a Kṣatriya.

242. A king who does not fight and a Brahman who does not travel about; these two swallows the earth, like a snake does the animals living in holes.

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[173] *See* Manu, VII, 87.

[174] *See* Mahābhārata, Rājadharma, LVII, 1, and the observations on this śloka on pp. 204 and 205.

243. Brāhmaṇasyāpi cāpattau kṣatradharmeṇa vartataḥ,
praśastam jīvitam loke kṣatram hi brahmasambhavam.

244. Adharmaḥ kṣatriyasyaiṣa yacchayyāmaraṇam bhavet,
visṛjan śleṣmapittāni kṛpaṇam paridevayan.[175]

245. Avikṣatena dehena pralayam yo' dhigacchati
kṣatriyo nāsya tat karma praśaṁsanti purāvidaḥ.[176]

246. Na gṛhe maraṇam śastam kṣatriyāṇām vinā raṇāt,
śauṇḍīrāṇām aśauṇḍīram adharmam kṛpaṇam hi yat.[177]

247. Raṇeṣu kadanam kṛtvā jñātibhiḥ parivāritaḥ
śastrāstraiḥ suvinirbhinnaḥ kṣatriyo vadham arhati.[178]

Prescriptions for Kṣatriyas.

243. Even for a Brahman who lives during misfortune according to the Kṣatriya rule, it is in the world a laudable living, for a Kṣatriya is sprung from Brahma.

244. There would be a demerit to a Kṣatriya whose death would be on a couch, emitting phlegm and bile and wailing piteously.

245. Those persons who are acquainted with the past do not praise the death of that Kṣatriya who meets his dissolution with unwounded body.

246. The death of Kṣatriyas in a house without a combat is not praised; it would be despicable, unrighteous, and miserable.

247. A Kṣatriya has earned (a noble) death, when, surrounded by his relations, he has made a slaughter (of enemies) on the battle fields, and is well pierced with arms and missiles.

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[175] *See* Mahābhārata, Śāntiparva, Rājadharma, XCVII, 23.

[176] *See* Mahābhārata, Śāntiparva, Rājadharma, XCVII, 24.

[177] *See* ibidem, 25; instead of *śastam* tāta, and instead of *vinā raṇāt* praśasyate.

[178] *See* ibidem, 28; but the second half of the śloka differs, for instead of it we read *tīkṣṇaiḥ śastrairabhikliṣṭaḥ kṣatriyo mṛtyum arhati.* The change in the reading *tīkṣṇaiḥ śastraiḥ* for *śastrāstraiḥ* is significant.

248. Āhaveṣu mitho'nyonyam jighāṁsanto mahīkṣitaḥ
yudhyamānāḥ param śaktyā svargam yāntyaparāṅ-
mukhāḥ.[179]
249. Bharturartheca yaḥ śūro vikramet vāhinīmukhe
bhayāt na nivarteta tasya svargo hyanantakaḥ.
250. Āhave nihatam śūram na śoceta kadācana[180]
nirmuktaḥ sarvapāpebhyaḥ pūto yāti salokatām.
251. Varāpsarassahasrāṇi śūram āyodhane hatam
tvaramāṇāḥ pradhāvanti hyayam mama bhavet iti.[181]
252. Munibhirdīrghatapasā prāpyate yat padam mahat
yuddhābhimukhanihataiḥ śūraiḥ tat drāk avāpyate.
253. Etat tapaśca puṇyam ca dharmaścaiva sanātanaḥ
catvāra āśramāstasya yo yuddhe na palāyate.[182]

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248. The rulers of the earth, who, wishing to kill each other in battles, are fighting with utmost strength, go to heaven with not averted heads.

249. That hero who fights for the sake of his king in front of the army, nor turns away from fear, is sure of the everlasting heaven.

250. One should never bewail a hero who is killed in battle, freed from all sins he goes purified to the world specially assigned to him.

251. Towards a hero who is killed in battle run thousands of the best Apsaras, saying: "this one should be mine."

252. That grand step which after long penance is obtained by sages, is quickly won by heroes, who are killed with their faces turned towards the contest.

253. He who does not run away in the battle, earns this penance, this merit, this primeval virtue and the four stages.

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179 *See* Manu, VII, 89; and Nītiprakāśikā, VII, 44.

180 *Compare* Mahābhārata, Rajadharma, XCVIII, 43b.

181 *See* Parāśarasmṛti, IV, 37; and Mahābhārata, ibidem, XCVIII, 45b and 46a; the latter half śloka runs there thus: tvaramāṇābhidhavanti mama bhartā bhavet iti.

182 *See* Mahābhārata, ibidem XCVIII, 46b and 47a.

254. Na hi śauryāt param kiñcit triṣu lokeṣu vidyate
śūraḥ sarvam pālayati śure sarvam pratiṣṭhitam.[183]

255. Carāṇām acarā annam adaṁṣṭrā daṁṣṭriṇām api
apāṇayaḥ pāṇimatām annam śūrasya kātarāḥ.[184]

256. Dvāvimau puruṣau loke sūryamaṇḍalabhedinau
parivrāṭ yogayuktaśca raṇe cābhimukho hataḥ.[185]

257. Ātmānam gopayet śakto vadhenāpyātatāyinaḥ,
suvidyabrāhmaṇaguroryuddhe śrutinidarśanāt.

258. Ātatāyitvam āpanno brāhmaṇaḥ śūdravat smṛtaḥ
nātatāyivadhe doṣo hanturbhavati kaścana.[186]

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254. In the three worlds there is nothing known better than heroism, the hero protects all, in a hero all is fixed.

255. The food of moving beings is the immoveable, of those who have fangs those that have no fangs, of those who have hands those who have no hands; the food of the hero is the coward.

256. These two persons in the world have penetrated to the sphere of the sun, the devotee who is immersed in deep meditation, and he who is killed, whilst turned to the battle.

When a Brahman-murder allowed.

257. A strong man may according to the order of the Veda protect himself in the battle by slaying a preceptor, who is a learned Brahman, if he attempts his life.

258. A Brahman who has committed a murder is regarded as a Śūdra; for the murder of an assassin no fault whatever is to be found with the person who kills him.

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[183] *See* Mahabhārata, ibidem, XCIX, 18.

[184] *See* Mahābhārata, ibidem, XCIX, 15.
Carāṇām acarā hyannam adaṁṣṭrā daṁṣṭriṇām api
āpaḥ pipāsatām annam annam śūrasya kātarāḥ.

[185] *See* Parāśarasmṛti, IV, 32.

[186] *Compare* Manu, VIII, 351a.

259. Udyamya śastram āyāntam bhrūṇam apyātatāyinam
nihatya bhrūṇahā na syāt ahatvā bhrūṇahā bhavet.[187]
260. Apasarati yo yuddhāt jīvitārthī narādhamaḥ
jīvan eva mṛtaḥ sopi bhuṅkte rāṣṭrakṛtam tvagham.
261. Mitram vā svāminam tyaktvā nirgacchati raṇāt ca yaḥ
so'nte narakam āpnoti sa jīvan nindyate'khilaiḥ.
262. Mitram āpadgatam dṛṣṭvā sahāyam na karoti yaḥ
akīrtim labhate so'tra mṛto narakam ṛcchati.[188]
263. Visrambhāt śaraṇam prāptam śaktaḥ tyajati durmatiḥ
sa yāti narake ghore yāvat indrāścaturdaśa.

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259. He who has raised a weapon against an approaching assassin, though this be a Vaidika Brahman, (and) killed him, should not be considered as a Vaidikabrahman-murderer ; if he has not killed him, he should be regarded as such.

260. He who desirous of his life goes away from the battle is a very bad man, though alive he is surely dead ; he has to bear the sin done in the realm. Punishment of cowardice.

261. He who, having left his friend or his king, goes from the battle field, goes at his death to hell, and is blamed by all during his life.

262. He who, having seen his enemy going into danger, does not help him, acquires infamy here and goes, when dead, to hell.

263. The wicked, who though strong, deserts him who confidingly comes to him for protection, stays in a fearful hell, as long as there are fourteen Indras.

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[187] *See* Mahābhārata, Śāntiparva, Rājadharma, LVI, 28-30, and p. 204. *Compare* Manu, VIII, 350.

Gurum vā bālavṛddhau vā brāhmaṇam vā bahuśrutam
ātatāyinam āyāntam hanyāt evā vicārayan ;

and about *bhrūṇahā* Manu, VIII, 317.

[188] *Compare* with this and the preceding Ślokas the Mahābhārata as above, 20-21.

264. Sudurvṛttam yadā kṣatram nāśayeyustu brāhmaṇāḥ
yuddham kṛtvāpi śastrāstrairna tadā pāpabhāginaḥ.
265. Hīnam yadā kṣātrakulam nicairlokaḥ prapīḍyate
tadāpi brāhmaṇā yuddhe nāśayeyuḥ tu tān dhruvam.
266. Uttamam māntrikāstreṇa nālikāstreṇa madhyamam
śastraiḥ kaniṣṭham yuddham tu bāhuyuddham tato'dhamam.
267. Mantreritamahāśaktibāṇādyaiḥ śatrunāśanam
māntrikāstreṇa tat yuddham sarvayuddhottamam smṛtam
268. Nālāgnicūrṇasaṁyogāt lakṣe golanipātanam
nālikāstreṇa tat yuddham mahāhrāsakaram ripoḥ.
269. Kuntādiśastrasaṅghātairnāśanam ripūṇām ca yat
śastrayuddham tu tat jñeyam nālāstrābhāvataḥ sadā.
270. Karṣaṇaiḥ sandhimarmāṇām pratilomānulomataḥ
bandhanairghātanam śatroryuktyā tat bāhuyuddhakam.

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264. If the Brahmans should even with arms and missiles destroy in a war bad behaving Kṣatriyas, they do then commit no sin.

265. If, when the Kṣatriya caste is weak, the world is oppressed by mean persons, then also should the Brahmans surely destroy those in war.

Modes of Fighting.

266. The best fight is with enchanted missiles, the middling is with tubular projectile weapons, the lowest with weapons, the worst is fighting with the arms.

267. The destruction of enemies by arrows and other weapons of great force and despatched by spells, and by enchanted missiles, is recorded as the best fighting of all.

268. The throwing of a ball by a tubular instrument through the application of gunpowder and a tube is very destructive to the enemy.

269. The destruction of the enemy which takes place by means of lances and other weapons, is always to be known as the combat with weapons in the absence of tubular projectile weapons.

270. The killing of the enemy by injuring his joints and vital

271. Nālāstrāṇi puraskṛtya laghūni ca mahānti ca
tat pṛṣṭhagāñśca pādātān gajāśvān pārśvayoḥ sthitān
kṛtvā yuddham prārabheta bhinnāmātyabalāriṇā
272. Sāmmukhyena prapātena pārśvābhyām apayānataḥ
yuddhānukūlabhūmestu yāvallābhastathāvidham.
273. Sainyārdhaṁśena prathamam senapairyuddham īritam
amātyagopitaiḥ paścāt amātyaiḥ saha tat bhavet,
nṛpasaṅgopitaiḥ paścāt svataḥ prāṇātyaye ca tat.
274. Dīrghadhvaniparišrāntam kṣutpipāsāhitaśramam[189]
vyādhidurbhikṣamaraṇaiḥ pīḍitam dasyuvidrutam ;[190]

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parts, by tossing him backwards and forwards, and by grasping him, is properly regarded as the fighting with the arms of the body.

271. Having placed the small and big guns in front ; and behind them the infantry, and on the two flanks the elephants and horses, he should begin the battle, when the hostile army and ministers are disunited,

272. by attacking the enemy in front, by falling on him with the two wings, by retreating, in such a manner so far as the advantage of the ground favours the combat.

273. The battle should be first opened by generals with half the army, it should then be continued by the ministers with the troops under their command, and at last by the king himself with the troops under his special orders, when life at large is at stake.

274. If his own army is exhausted by a long march, experiences distress through hunger and thirst, is destroyed by disease, famine and death, is alarmed by marauders;

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[189] *See* Hitop., III, 108a.
Dīrghavartmaparišrāntam nadyadrivanasaṅkulam.

[190] *See* Kāmand., XVIII, 50.
Dīrghe'dhvani parišrāntam kṣutpipāsāhimaklamam
vyādhidurbhikṣamarakaiḥ pīḍanam dasyuvidrutam.
Hitop., III, 109a. Pramattam bhojanavyagram vyādhidurbhikṣapīḍitam

275. Paṅkapāṁsujalaskandhavyastam śvāsāturam tathā
prasuptam bhojane vyagram abhūmiṣṭham asaṁsthitam;[191]

276. Ghorāgnibhayavitrastam vṛṣṭivātasamāhatam,[192]
evamādiṣu jātiṣu vyasaneṣu samākulam
svasainyam sādhu rakṣet tu, parasainyam vināśayet.[193]

277. Upāyān ṣaḍguṇān mantram śatroḥ svasyāpi cintayan
dharmayuddhaiḥ kūṭayuddhairhanyāt eva ripum sadā.

278. Yāne sapādabhṛtyā tu svabhṛtyān vardhayan nṛpaḥ
svadeham gopayan yuddhe carmaṇā kavacena ca;

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275. is troubled on the roads by much mud, dust and water, is also out of breath, is sleepy, is engaged in eating, has no proper place to stand upon, is in disorder;

276. is frightened by the fear of horrible fires, is heavily exposed to wind and rain, and is distressed by such existing calamities, he should well guard it; but he should destroy the army of his enemy, if it is in a similar state.

277. Considering the six-fold expedients and the design of his enemy and his own, he should surely always kill his enemy by fair and unfair fighting.

278. When the king gladdens his soldiers on the march with a quarter extra pay, protects his body in the battle with a shield and armour;

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[191] *See* Kāmandakīya, XVIII, 51b and 52a.
Paṅkapāṁśujalaklinnam vyastam puñjīkṛtam pathi
prasuptam bhojanavyagram abhūmiṣṭham asaṁsthitam.
Hitop., III, 109.
Pramattam bhojanavyagram vyādhidurbhikṣapīḍitam
asaṁsthitam abhūyiṣṭham vṛṣṭivātasamākulam.

[192] *See* Hitop., III, 108b. Ghorāgnibhayasantrastam kṣutpipāsārditam tathā, and Kāmandakīya, XVIII, 52b, Caurāgnibhayavitrastam vṛṣṭivātasamāhitam.

[193] *See* Kāmandakīya, XVIII, 53.
svasainyam sādhu rakṣeta parasainyam ca ghātayet.

279. Pāyayitvā madam samyak sainikān śauryavarddhanam
nālāstreṇa ca khaḍgādyaiḥ sainiko ghātayet arim.

280. Kuntena sādī bāṇena rathago gajago'pi ca
gajo gajena yātavyaḥ turageṇa turaṅgamaḥ.

281. Rathena ca ratho yojyaḥ pattinā pattir eva ca
ekenaikaśca śastreṇa śastram astreṇa vāstrakam.

282. Na ca hanyāt sthalārūḍham na klībam na kṛtāñjalim
na muktakeśam āsīnam na tavāsmīti vādinam.[194]

283. Na suptam na visannāham na nagnam na nirāyudham
na yudhyamānam paśyantam, yudhyamānam pareṇa ca.[195]

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279. has made his soldiers drink up to a state of intoxication—the strengthener of bravery—; the soldier kills his enemy with a tubular instrument (*gun*), swords and other weapons.

280. A charioteer should be assailed by a lance, a person on a carriage or elephant by an arrow, an elephant by an elephant, a horse by a horse.

281. A carriage is to be opposed by a carriage, and a foot-soldier certainly by a foot-soldier, one person by another person, a weapon by a weapon, or a missile by a missile.

Who should not be killed.

282. He should not kill a person, who is alighted on the ground, nor one who is emasculated, nor one who has joined his hands as a supplicant, nor one who sits with dishevelled hair, nor one, who says, "I am thine;"

283. nor one who is asleep, nor one without a coat of mail, nor a naked, nor an unarmed person, nor a combatant who is looking on, nor one who is fighting with another;

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[194] *See* Manu, VII, 91; Nītiprakāśikā, VII, 46; and Mahābhārata, Rājadharma, XCVI, 3, and XCVIII, 48a.

[195] *See* Manu, VII, 92.

na yudhyamānam paśyantam na pareṇa samāgatam;

and Nītiprakāśikā, VII, 47.

284. Pibantam na ca bhuñjānam anyakāryākulam na ca
na bhītam na parāvṛttam satām dharmam anusmaran.[196]
285. Vṛddho bālo na hantavyo naiva strī kevalo nṛpaḥ,
yathāyogyam tu saṁyojya nighnan dharmo na hīyate.
286. Dharmayuddhe tu kūṭe vai na santi niyamā amī
na yuddham kūṭasadṛśam nāśanam balavadripoḥ.
287. Rāmakṛṣṇendrādidevaiḥ kūṭam evādṛtam purā ;
kūṭena nihato Bālir Yavano Namuciḥ tathā.
288. Praphullavadanenaiva tathā komalayā girā
kṣuradhāreṇa manasā ripoḥ chidram sulakṣayet.
289. Pañcāśītiśatānīkaḥ senākāryam vicintayan
sadaiva vyūhasaṅketavādyaśabdāntavartinaḥ
sañcareyuḥ sainikāśca rājarāṣṭrahitaiṣiṇaḥ.

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284. nor one who is drinking or eating, nor one engaged in another matter, nor one who is frightened, nor one who is running away ; remembering the custom of the good.

285. Neither is an old man or a child to be killed, surely not a woman and especially not a king. If one kills, having fought in a suitable manner, no virtue is violated.

286. These restrictions exist in fair but not in unfair fighting, for the destruction of a powerful enemy there is no fighting like unfair fighting.

287. Unfair fighting was certainly observed by Rāma, Kṛṣṇa, Indra and other gods ; Bāli, Yavana and also Namuci were killed by unfair fighting.

288. With a cheerful face certainly and with a pleasing voice, but with a mind sharp as a razor he should always keep in view the vulnerable point of the enemy.

Rules how to drill an army.

289. A king with 8,500 soldiers should study the working of an army, and the soldiers should always march, being well acquainted with the words (of command), the bugle-calls, sounds, signs, and military arrays, wishing for the welfare of the king and kingdom.

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[196] *See* Manu, VII, 93b.

290. Bheditām śatruṇā dṛṣṭvā svasenām ghātayet ca tām.
291. Pratyagre karmaṇi kṛte yodhairdadyāt dhanam ca tān pāritoṣyam vādhikāram kramato' rham nṛpaḥ sadā.
292. Jalānnatṛṇasaṁrodhaiḥ śatrum sampīḍya yatnataḥ purastāt viṣame deśe paścāt hanyāt tu vegavān.
293. Kūṭasvarṇamahādānairbhedayitvā dviṣadbalam nityavisrambhasaṁsuptam prajāgarakṛtaśramam, vilobhyāpi parānīkam apramatto vināśayet.
294. Kṣaṇam yuddhāya sajjeta kṣaṇam cāpasaret punaḥ akasmāt nipatet dūrāt dasyuvat paritaḥ sadā.
295. Rūpyam hemaca kupyam ca yo yat jayati tasya tat[197] dadyāt kāryānurūpam ca hṛṣṭo yodhān praharṣayan.

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290. A king having observed that his army has been won over by the enemy, he should destroy it.

Rewards for soldiers.

291. A king should always, after a fresh victory has been won by his soldiers, give them a gratifying reward, and deserving promotion in due order.

Harassing the enemy.

292. Having at first harassed the enemy in a hilly country by cutting off water, food and grass, he should afterwards vanquish him.

293. Having sown dissensions in the hostile army by great gifts of counterfeit gold, and having deceived the (remaining) inimical host, which is sleeping in complete security and tired out by watches, a vigilant king should destroy it.

294. At one moment he should endeavour to fight, at another moment he should retreat again, he should suddenly fall upon him from far, being always on every side, like a robber.

Concerning plunder.

295. The silver, gold and copper, which a soldier wins, belong to him, and the king should eagerly, gratifying the warriors, bestow on them rewards according to merit.

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[197] *See* Manu, VII, 96.

296. Vijitya ca ripūn evam samādadyāt karam tathā
rājyāṁśam vā sarvarājyam nandayeta tataḥ prajāḥ.
297. Tūryamaṅgalaghoṣeṇa svakīyam puram āviśet
tatprajāḥ putravat sarvāḥ pālayetātmasātkṛtāḥ.
298. Niyojayet mantrigaṇam aparam mantracintane
deśe kāle ca pātre ca hyādimadhyāvasānataḥ
bhavet mantraphalam kīdṛk upāyena katham tviti.
299. Mantryādyadhikṛtaḥ kāryam yuvarājāya bodhayet
paścāt rājñe tu taiḥ sākam yuvarājo nivedayet.
300. Rājā saṁśāsayet ādau yuvarājam tataḥ tu saḥ
yuvarājo mantrigaṇān rājāgre te'dhikāriṇaḥ.
301. Sadasatkarma rājānam bodhayet hi purohitaḥ.

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296. Having thus conquered his enemy he should take tribute, a part of the kingdom or the whole kingdom and gladden afterwards his subjects. Tribute.

297. He should enter his town amidst the propitious sound of musical instruments, and he should protect all the people confided to him like sons.

298. He should appoint one set of ministers (for administration); and another for the consideration of council, (to consider) according to place, time, and person, according to the beginning, midst or end, what means should be adopted and what would be the result of the policy. Administrative and executive officers.

299. The prime minister should inform the crown prince of the state of affairs, (and) the crown prince should together with these (ministers) afterwards impart it to the king. Privy council.

300. The king should at first issue instructions to the crown prince, the crown prince should then in the presence of the king give commands to the boards of ministers, and these to their officers.

301. The priest should truly teach the king right and wrong. Priest.

302. Grāmāt bahiḥ samīpe tu sainikān dhārayet sadā
grāmyasainikayorna syāt uttamarṇādharmarṇatā.

303. Sainikārtham tu paṇyāni sainye sandhārayet pṛthak
naikatra vāsayet sainyam vatsaram tu kadācana.

304. Senāsahasram sajjam syāt kṣaṇāt saṁśāsayet tathā
saṁśāsayet svaniyamān sainikān aṣṭame dine.

305. Caṇḍatvam ātatāyitvam rājakārye vilambanam
aniṣṭopekṣaṇam rājñah svadharmaparivarjanam,

306. Tyajantu sainikā nityam saṁlāpam apicāparaiḥ,
nṛpājñayā vinā grāmam na viśeyuḥ kadācana,

307. Svādhikāriganasyāpi hyaparādham diśantu naḥ,
mitrabhāvena vartadhvam svāmikārye sadākhilaiḥ.

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302. The king should always place the soldiers outside the village but near; between villagers and soldiers there should be no relation of creditor and debtor. *Soldiers not to live in villages.*

303. He should open separately bazars in the camp for the sake of the soldiers, and he should never let an army remain at one place a year. *Bazaar.*

304. A king should order that a troop of a thousand men be ready at a moment's notice, he should teach the soldiers his orders in eight days.

305. "Let the soldiers always avoid committing a rash act, a murderous assault, delay in the service of the king, overlooking what is disagreeable to the king, and neglect in the performance of their duties; *General orders.*

306. "Let them avoid having conversations with strangers; nor should they enter a village without the permission of the king.

307. "Let them communicate to us any mistake made by an officer or a man belonging to the rank and file; and may you always be while in the service of the king in a state of friendship with all.

308. Sūjjvalānica rakṣantu śastrāstravasanāni ca
annam jalam prasthamātram pātram bahvannasādhakam.
309. Śāsanāt anyathā cārān vineṣyāmi yamālayam
bhedāyitā ripudhanam gṛhītvā darśayantu mām.
310. Sainikairabhyaset nityam vyūhādyanukṛtim nṛpaḥ
tathāyane'yane lakṣyam astrapātairbibhedayet.
311. Sāyam prātaḥ sainikānām kuryāt saṅgaṇanam nṛpaḥ
jātyākṛtivayodeśagrāmavāsān vimṛśya ca.
312. Kālam bhṛtyavadhim deyam dattam bhṛtyasya lekhayet
kati dattam hi bhṛtyebhyo vetane pāritoṣikam,
tat prāptipatram gṛhṇīyāt dadyāt vetanapatrakam.
313. Sainikāḥ śikṣitā ye ye teṣu pūrṇā bhṛtiḥ smṛtā
vyūhābhyāse niyuktā ye teṣvardhām bhṛtim āvahet.

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308. "Let them keep very clean the arms, projectile weapons and dress, the food, water, the vessel which holds a *prastha*-measure and in which much food can be prepared.

309. "I shall remove the soldiers who disobey these orders to the abode of Death. The soldiers disbanded for plunder should show me what booty they have taken from the enemy."

310. A king should always practise with his soldiers the manner of formations, and other military drills, and should likewise try every half year to pierce the target by discharging projectile weapons.

311. A king should every evening and morning muster his soldiers, having enquired into their caste, physique, age, country, village and station. Muster.

312. He should write down the time, the amount of pay, what pay has been given and is to be given, what present has been given to the soldier in his pay. He should take a receipt for it, and should give a pay-bill. Pay.

313. For the soldiers, who are disciplined, is mentioned full-pay; to those, who are undergoing instruction in military formations he should give half-pay.

314. Asatkartrāśritam sainyam nāśayet śatruyogataḥ.

315. Nṛpasyāsadguṇaratāḥ ke guṇadveṣiṇo narāḥ
asadguṇodāsīnāḥ ke hanyāt tān vimṛśan nṛpaḥ,
sukhāsaktān tyajet bhṛtyān guṇinopi nṛpah sadā.

316. Susvāntalokaviśvastā yojyāḥ tvantaḥpurādiṣu
dhāryāḥ susvāntaviśvastā dhanādivyayakarmaṇi.

317. Tathā hi lokaviśvasto bāhyakṛtye niyujyate
anyathā yojitāḥ te tu parivādāya kevalam.

318. Śatrusambandhino ye ye bhinnā mantrigaṇādayaḥ
nṛpadurguṇato nityam hṛtamānaguṇādikāḥ,
svakāryasādhakā ye tu subhṛtyā poṣayet ca tān.

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314. A king should destroy an army which is attached to an untrustworthy general, who is in collusion with the enemy.

315. A king, remembering those persons, who rejoice in his faults and hate his virtues, or who are indifferent to his faults, should kill them; servants who are devoted to pleasure he should dismiss, even if they are otherwise good.

Treatment of servants.

316. Well disposed and popular persons should be placed in his harem and elsewhere; well disposed and reliable persons should be employed in the distribution of money, &c.

Appointments how to be filled.

317. A person who has gained the confidence of the people should be likewise appointed to posts outside the palace, otherwise if incompetent persons were appointed, they would only bring on discredit.

318. He should support with good pay the group of ministers and other officers, who will serve his interests, and who while actually in the service of the enemy are disaffected, and who have lost their pride, virtue, and other good qualities through the badness of their king.

Creating dissensions in the enemy's camp.

319. Lobhenā'sevanāt bhinnāḥ teṣvardhām bhṛtim āvahet
śatrutyaktān suguṇinah subhṛtyā pālayet nṛpaḥ.
320. Pararāṣṭre hṛte dadyāt bhṛtim bhinnāvadhim tathā
dadyāt ardhām tasya putre striyai pādamitām kila.
321. Hṛtarājyasya putrādau sadguṇe pādasammitam
dadyāt vā tadrājyatastu dvātṛṁśāṁśam prakalpayet.
322. Hṛtarājyasya nicitam kośam bhāgārtham āharet.
323. Kausīdam vā taddhanasya pūrvoktārdham prakalpayet,
taddhanam dviguṇam yāvat na tat tūrdhvam kadācana.
324. Svamahatvadyotanārtham hṛtarājyān pradhārayet
prāṅmānairyadi sadvṛttān durvṛttāstu prapīḍayet.

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319. The king should give half pay to those who are gone away (and have come back) from greed and disregard; he should provide excellent persons who have left the enemy, with good pay.

What to give to a vanquished king.

320. If the kingdom of an enemy has been taken, he should give him pay from the time of the deposition; half the amount he should give to the son, a quarter surely to the wife.

321. He should give to the son or other relation of a dethroned prince, if he is very good, a fourth part of the income from the kingdom, or he may assign to him the thirty-second part of the kingdom.

322. He should take for his own share the amassed treasure of the dethroned prince.

323. Or he may fix on the dethroned prince the interest accruing from the treasure, *i.e.*, the above mentioned portion ($\frac{1}{32}$), till the total sum (received by him) is double the amount of the treasure.

324. He should maintain well the dethroned princes for the glory of his own greatness, if they are good with the honors formerly enjoyed by them; but if bad, he should suppress them.

325. Aṣṭadhā daśadhā vāpi kuryāt dvādaśadhāpi vā
yāmikārtham ahorātram yāmikān vīkṣya nānyathā.

326. Ādau prakalpitān aṁśān bhajeyuryāmikāstathā
ādyaḥ punastvantimāṁśam svapūrvāṁśam tato'pare.

327. Punarvā yojayet tadvat ādye'ntyam cāntime tataḥ
svapūrvāṁśam dvitīye'hni dvitīyādiḥ kramāgatam.

328. Caturbhyastvadhikān nityam yāmikān yojayet dine
yugapad yojayet dṛṣṭvā bahūn vā kāryagauravam.

329. Caturūnān yāmikānstu kadā naiva niyojayet.

330. Yadrakṣyam upadeśyam yat ādeśyam yāmikāya tat
tatsamakṣam hi sarvam syāt yāmiko'pica tat tathā.

Watchmen.

325. For the sake of the watchmen he should divide night and day into eight, ten or twelve watches, having previously looked at the (the number of the) watchmen, not otherwise.

326. The watchmen will also share (amongst them all) the originally fixed watches ; the first watchman will again take the last watch, and each of the others will take the watch of his predecessor.

327. Or he may also appoint as before the last watchman to the first and last watch ; the second watchman and the others should in due order obtain on the second day, &c. the watch of the first watchman.

328. He should always appoint every day more than four watchmen, or on some occasions having seen that the work is heavy, he should appoint many.

329. He should never appoint less than four watchmen.

330. The watchman should be told what is to be guarded, and what is to be communicated ; all should be before his eyes, and the watchman should do it accordingly.

331. Kīlakoṣṭe tu svarṇādi rakṣet niyamitāvadhi
svāṁśānte darśayet anyayāmikam tu yathārthakam.

332. Kṣaṇe kṣaṇe yāmikānām kāryam dūrāt subodhanam.

333. Satkṛtān niyamān sarvān yadā sampādayet nṛpaḥ
tadaiva nṛpatiḥ pūjyo bhavet sarveṣu nānyathā.

334. Yasyāsti niyatam karma niyataḥ sadgraho yadi
niyato'sadgrahatyāgo nṛpatvam so'śnute ciram.

335. Yasyāniyamitam karma sādhutvam vacanam tvapi
sadaiva kuṭilaḥ syāt tu svapadāt drāk vinaśyati.

336. Nāpi vyāghragajāḥ śaktā mṛgendram śāsitum yathā
na tathā mantriṇaḥ sarve nṛpam svacchandagāminam.

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331. He should up to the appointed time guard the gold and other things in the bolted treasury, (and) at the end of his watch he should show the amount of the treasure to another watchman.

332. There should be kept continually from a distance a good lookout on the watchmen.

333. If a king should succeed in having all his orders well executed, he will surely be honoured among all men, but not otherwise.

Respect enjoyed by a king.

334. The king, who is steady at his work, shows kindness to good people and discountenances bad persons, enjoys his kingdom for a long time.

335. The king, who is unsteady in his work, good behaviour and speech, and who is always deceitful, disappears soon from his throne.

336. As tigers and elephants even are not able to govern the lion, thus also all ministers are not able to govern a king, who goes on as he likes.

337. Nibhṛtā dhikṛtāstena nissāratvam hi teṣvataḥ
gajo nibadhyate naiva tūlabhārasahasrakaiḥ.
338. Uddhartum drāk gajaḥ śaktaḥ paṅkalagnagajam balī,
nītibhraṣṭanṛpam tvanyanṛpa uddhāraṇakṣamaḥ.
339. Balavannṛpabhṛtye' lpe' pi śrīḥ tejo yathā bhavet
na tathā hīnanṛpatau tanmantriṣvapi no tathā.
340. Bahūnām aikamatyam hi nṛpaterbalavattaram
bahusūtrakṛto rajjuḥ siṁhādyākarṣaṇakṣamaḥ.
341. Hīnarājyo ripubhṛtyo na sainyam dhārayet bahu,
kośavṛddhim sadā kuryāt svaputrādyabhivṛddhaye.
342. Kṣudhayā nidrayā sarvam aśanam śayanam śubham
bhavet yathā tathā kuryāt anyathāśu daridrakṛt.

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337. By the king are humbled and censured the ministers, among them is therefore surely weakness ; an elephant is not bound even by 1,000 loads of cotton.

338. A strong elephant is able to draw out quickly another elephant who sticks in the mud ; a king is only able to reform an iniquitous king.

339. Even if the servants of a mighty king are insignificant there may be power and splendour ; but it will not be the same with a weak king, even if his ministers are not so.

340. The unanimity of many makes a king very strong ; a rope made of many strings is able to drag a lion and other beasts.

341. A king whose kingdom is reduced and who has become a dependent of his enemy should not maintain a large army, he should always increase his treasure, for the recovery of power by his son and descendants.

A weak kingdom how to strengthen

342. He should so work that through hunger and sleepiness every kind of food and couch becomes agreeable, otherwise he will soon become poor.

343. Diśānayā vyayam kuryāt nṛpo nityam na cānyathā.
344. Dharmanītivihīnā ye durbalā api vai nṛpāḥ,
sudharmabalayugrājñā daṇḍyāste cauravat sadā.
345. Sarvadharmāvanāt nīcanṛpo'pi śreṣṭhatām iyāt
uttamo'pi nṛpo dharmanāśanāt nīcatām iyāt.
346. Dharmādharmapravṛttau tu nṛpa eva hi kāraṇam
sa hi śreṣṭhatamo loke nṛpatvam yaḥ samāpnuyāt.
347. Manvādyairādṛto yo'rthaḥ tadartho Bhārgaveṇa vai,
dvāviṁśatiśatam ślokā nītisāre prakīrtitāḥ.
348. Śukroktanītisāram yaḥ cintayet aniśam sadā
vyavahāradhuram voḍhum sa śakto nṛpatirbhavet.
349. Na kaveḥ sadṛśī nītiḥ triṣu lokeṣu vidyate
kāvyaiva nītiranyā tu kunītirvyavahāriṇām.

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343. A king should always spend in this manner, not otherwise.

344. Those kings who are surely deficient in righteousness and good behaviour, and are also weak, should be punished by a strong and righteous king, like thieves.

345. A lowbred king even may obtain excellence by the protection of righteousness, while a king of the highest caste may be ruined through the suppression of righteousness.

346. A king is surely the cause for the prevalence of right and wrong; he who obtains kingship is surely the very best in the world.

347. This matter concerning wordly prosperity which was respected by Manu and others was also surely respected by Bhārgava; 2,200 double verses are told in his essence of polity.

348. He who would always consider the essence of polity spoken by Śukra, may become a king capable of bearing the burden of administration.

Excellence of Śukra's polity.

349. Such a polity as that of the Poet (Śukra) is not known in the three worlds. The Polity (propounded) by the Poet is (good) polity, any other polity among men is bad policy.

350. Nāśrayanti ca ye nītim mandabhāgyāstu te nṛpāḥ,
kātaryāt dhanalobhāt vā syurvai narakabhājanāḥ.

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350. Those unfortunate princes, who out of cowardice or cupidity do not have recourse to this polity, will surely have their share in Hell.

SCHEME OF TRANSLITERATION.

	Consonants.	Vowels.	Diphthongs.
Gutturals	k kh g gh ṅ h ḥ	a ā	e ai
Palatals	c ch j jh ñ y ś	i ī	
Linguals	ṭ ṭh ḍ ḍh ṇ r ṣ	ṛ ṝ	
Dentals	t th d dh n l s	ḷ	
Labials	p ph b bh m v ḥ	u ū	o au

Anusvāra .. .. .. ṁ (*real*), ṃ (*unreal*) ; Avagraha .

APPENDIX.

IDENTIFICATION OF THE MANIPURA OF THE MAHĀBHĀRATA WITH MANIPURA OR MANALŪRU OR MADURA IN SOUTH INDIA.

On a previous occasion (pp. 232 and 233) we mentioned the city of Maṇipura as a place to which the Mahābhārata according to Mr. Talboys Wheeler ascribes fortifications provided with firearms.

This Maṇipura is declared by Mr. Wheeler to be the modern "Munnipur in the extreme east beyond the Bengal frontier . . . a secluded valley lying between Eastern Bengal and Burmah; and the people appear to be a genuine relic of the ancient Nāgas."[199]

The late Professor Christian Lassen, by far the greatest authority on matters connected with Indian Archæology, inclines to place it on the Eastern Coast of India south of Chicacole at the mouth of the *Lāṅgulya* river, identifying it with a locality he calls Manphur-Bunder.[200]

In order to fix the locality of Maṇipura it is necessary to follow Arjuna on his journey as described in the first book of the Mahābhārata.[201] Arjuna goes first to the North, reaches the Ganges, bathes in the holy river, and meets here the fair Ulūpī, with whom he stays for some time. He visits all the holy places in Aṅga, Vaṅga, and Kaliṅga. Pursuing his road to the South along the Mahendra mountains, he crosses Kaliṅga, goes along the coast and reaches Maṇipura. Here

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[199] *See* History of India, I, 144, 149, 421 and elsewhere.

[200] *See* Indische Alterthumskunde, I, 676, 677, (563). 2nd Note "der Name scheint im Manphur-Bunder, erhalten zu sein, welches bei Cikakul nahe bei Koringapatam liegt."

[201] *See* Mahābhārata, Ādiparva, Chap. 174, 176; Bhāratacampū, III. Stavaka; Oriental Hist. MSS. Vol. I, 225, 226.

reigned the king Citravāhana, who had an only daughter Citrāṅgadā. Arjuna demanded her in marriage, after having made himself known. The king did not object to this request, but demanded that, as Citrāṅgadā was his only child, —for no Rāja of Maṇipura had ever had or would have more than one child,—the son born to Arjuna by his daughter should become king of Maṇipura. To this Arjuna consented and a son, Babhruvāhana, was born to Citrāṅgadā, and after Arjuna had staid for three years in Maṇipura, he left it, turned towards the Western Coast, wandered along it to Gokarṇa, and finally met Kṛṣṇa at Dvārakā. In the horse sacrifice Arjuna came once more to Maṇipura, fought with, and was killed by, his son Babhruvāhana, but was revived through the life-restoring jewel.

Deciding on the evidence before us as taken from the Mahābhārata, Mr. Wheeler's identification of the ancient Maṇipura with the modern Munnipur falls to the ground, and with it all his explanations of the significance of this myth. That the stories concerning Arjuna's journey to Maṇipura should be known among the Munnipurees of our days, and that they should claim to be the descendants of the inhabitants of ancient Maṇipura[202] need not astonish anybody. By this time the contents of the Mahābhārata are pretty well known all over India and its bordering states, and the Munnipurees do not stand alone in arrogating to themselves historical fame by taking advantage of the resemblance of names. There exist in India many places called Maṇipura.

Equally wrong, though less objectionable, is the conjecture of Lassen. There does not exist near Chicacole a place called Manphur-Bunder. The name of the town he thought of is not Manphur-Bunder, but Mafūs-Bandar. It lies on the left bank of the Lāṅgulya river near the sea, and is a comparatively modern place, as its name, which is a mixture

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[202] *See* History of India, I. p. 149.

of Arabic and Persian words, clearly indicates. Māfūs Bandar (మాఫూసుబందరు) should be properly transcribed *Mahfūz Bandar* (محفوظ بندر), which means a *secure harbour*, serving once probably Chicacole (*Śrīkākulam*) for such a purpose. Professor Lassen anxious to find a place on the north-eastern coast of the Dekkan which he could identify with Maṇipura, the capital of Babhruvāhana, fixed on Mafūs Bandar, mistaking *Mafūs* for *Manphur* (Maṇipura) most likely in consequence of a wrong application of the diacritical points over two letters. It may here be remarked that the originally Persian word *Bandar* is quite commonly used in Telugu, in the meaning of *harbour*, thus, *e.g.*, Masulipatam is generally called Bandar. The reason of this fact is that the seafaring population are mostly Muhammedans, the Arabs being in former times great navigators in these parts of the world.[203]

I believe that Professor Lassen was to a great extent induced to fix Maṇipura so far north, by limiting too much the extent of the Mahendra-mountain range, which he opined to be a particular mountain situated in Kaliṅga, and starting from these premises he went so far as to declare that the country Kaliṅga was wrongly mentioned in the Mahābhārata, as the region which, together with Aṅga and Vaṅga, Arjuna has passed through on his journey. The name Mahendra can apply to all the mountains near the Eastern Coast, including the Eastern Ghāṭs as well as the mountains near the sea of Bengal in the utmost south. Indra is the regent of the East, and the whole Eastern Coast is under his protection; a mountain near Rājamandry in the north is called *Rājamahēndra* and the highest and most southern mountain in India bears the name *Mahendragiri*.

In the Rāmāyaṇa Hanumān is said to have jumped from

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[203] North of Vizianagram lies inland a place called Muṇipurīpēṭa.

the Mahendra mountain to Ceylon (Laṅkā). This exploit would have been somewhat more difficult if Hanumān had to jump from Mafūsbandar to that island; as he would have been obliged to leap into the dark, for he could hardly see Ceylon from a place near Chicacole[204].

The mountain from which Hanumān is said to have jumped to Ceylon, bears to this day the name *Mahendragiri.* It is the same hill, near which the fierce warrior sage Paraśurāma lived. This Mahendragiri is the highest and most prominent peak north of Cape Comorin. It is 5,430 feet high and serves the sailors as a land mark; on its southern side lies the town Pannaguḍi.

On the east of the south part of the Eastern Ghāṭs, which is called there by the inhabitants also Mahendra, lies Madura, and a few miles still further east lies Maṇalūru. It may be here remarked, that Maṇalūru or Maṇipura lay formerly much nearer to the sea, as India has increased considerably on this side of the coast. In old legends we read, that the sea encroached on some occasions to the walls of Madura.

The Sanskrit name of this Maṇalūru is Maṇipura, and as such it was the capital of the ancient Pāṇḍya kingdom. Kulaśekhara Pāṇḍya is mentioned both in Tamil and Telugu records as the founder of Maṇipura, which was otherwise known by the name of Maṇalūru. The local traditions all coincide on this point. Maṇipura or Maṇalūru was the original site of the capital of the Pāṇḍya kings, which was afterwards transferred to Madura in its immediate neigh-

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[204] *See* Rāmāyaṇa Kiṣkindhākāṇḍa, LXVII, 40—43.

40. Āruroha nagaśreṣṭham mahendram arimardanaḥ.

43. Vicacāra hariśreṣṭho mahendrasamavikramaḥ.

Ibidem, Sundarakāṇḍa, I, 15, 213, 214.

Rāmāyaṇasaṅgraha, Sundarakāṇḍa, I, 1.

1. Tato Mahendraśikharāt utplutya Hanumān balī
surasāsiṁhike bhittvā Laṅkābahiravātarat.

Mahānāṭaka, Sundarakāṇḍa, I, 14, 15, 126, 127.

bourhood.[205] In some chronicles Maṇipura is also called Kalyāṇapura; the proposed identification of Kalyāṇapura with Kurkhi is quite without foundation.

Occasional excavations round Maṇalūru have brought to light substantial evidences of ancient structures, especially in the fields of Maṇalūru Cintāmaṇi, midway between the present Maṇalūru and Madura; old coins and ancient gold ornaments have also been found there in quantities. The neighbouring country round Maṇalūru stands among the natives in the reputation of containing many hidden treasures, and people often try to find them by means of the wand.

It is a most important coincidence that in some old MSS. of the Mahābhārata, instead of the name Maṇipura, the chapters of the Aśvamedha, which should contain it, give actually the name Maṇalūru.[206]

In the "Oriental Historical Manuscripts" of the Rev. Mr. Taylor occurs, instead of Maṇalūru the name Manavūru, but from further evidence given by Mr. Taylor himself, both names apply to one and the same place.[207] In some chronicles Madura is substituted for Maṇipura, and Arjuna is said to have married the daughter of the Pāṇḍya king of Madura.[208]

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[205] *See* Tamil Kadjān MS. No. 2327 in the Government Orient. MSS. Library ibidem, Local Records XLVII, 105: "Madhurasamīpamandunna Maṇipuram anagā Maṇalūru candravaṁśam Kulaśekharapāṇḍyuḍu rājyaparipālana, saṁv. 4,100." According to some Kulaśekhara himself transferred the capital from Maṇipura to Madura.

[206] *See* Aśvamedha, LXI, 1—3; LXVII, 1; LXVIII, 1; LXIX, 1.

LXI. 1. Kramena saha yastvevam vicaran Bharatarṣabha
*Maṇalūru*paterdeśam upāyāt saha Pāṇḍavaiḥ.
2. Śrutvā tu nṛpatirvīram pitaram Babhruvāhanaḥ
niryayau vinayenāryo brāhmaṇārghyapurassaraḥ.
3. *Maṇalūre*śvaram caivam upāyāntam dhanañjayaḥ.

LXVII. 1. Putrastasya mahābhāgo *Maṇalūre*śvaro yuvā.

LXVIII. 1. Prāyopaviṣṭe nṛpatau *Maṇalūre*śvare tathā.

LXIX. 1. Kim āgamanakṛtyam te Kauravyakulanandinī
*Maṇalūru*patestasya tathaiva caraṇājire.

[207] *See* Oriental Historical Manuscripts, by William Taylor, Missionary, I, 13, 57, 120.

[208] *See* Ibidem, p. 122.

The adventures of Arjuna during his exile have always been a subject of great interest among the Indians, and many of his exploits have gained for him a favorite place among the Pāṇḍava heroes.

Especially his journey to Maṇipura has been largely commented upon, as through his stay at that place and his marriage with the crown-princess Citrāṅgadā, the family of the Pāṇḍyas became united with that of the Pāṇḍavas.

Citravāhana and his grandson Babhruvāhana are frequently mentioned as Pāṇḍyas as well in old as in more modern records, and on this point they are unanimous. Mr. Nelson, the able compiler of the Manual of the Madura District, is by far too positive, when he says that in the Mahābhārata no mention is made of Arjuna having married a Pāṇḍya princess; for there exist copies which contain such an account.[209]

The fame and power of the Pāṇḍavas must have spread all over India and beyond it, for the conqueror of Ceylon, Vijaya, belongs also to this family.

Whether the connection of the Pāṇḍyas with the Pāṇḍavas was a real one, or whether it was only assumed by the former to invest themselves with greater authority and to raise their position in the eyes of the people is now difficult to find out, but the belief in such connection is a matter of fact.

According to a chronicle quoted by Mr. Taylor the Pāṇḍya kings were descended from Yayāti, the son of Nahuṣa. Yayāti had two sons by Devayānī, the daughter of Uśanas, Yadu and Turvaśa (Turvasu). "The younger brother of Yadu (*i.e.*, Turvaśa,) was the first Pandian. The place of his reigning was Manalūr. Among those of this race, one, named Kulaśeghara Pandian, by the favor of Śiva, cut down a forest of Kadambu trees, and built a town called Madura, where he lived."[210]

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[209] *See* Manual of the Madura District, by J. H. Nelson, M.A., III, 49.
[210] *See* Oriental Historical Manuscripts, I, 120.

We thus see, if the legend just narrated rests on any authority, that Maṇipura or Maṇalūru through its king, who was a son of daughter of Śukra, is connected with Śukrācārya,—the presumed author of the Śukranīti, and the expounder of the fabrication of gunpowder and the construction and handling of guns,—is the same Maṇipura, of which we have read in the Mahābhārata, that it was provided with firearms and guns against the attack of its enemies. If Maṇipura is the place which corresponds to the site of Maṇipura (Maṇalūru) near Madura, a great many otherwise inexplicable contradictions are easily solved.

The affection with which the Pāṇḍavas are remembered in India, and especially in the South, seems to me not only due to the interest which the story of their sufferings, their bravery, and final victory excited everywhere, but also to some cause by which their memory was effectually kept alive.

There are no monuments of great antiquity in Southern India, especially on the Eastern Coast, with which legendary lore does not somehow connect the name of the Pāṇḍavas. Thus we observe that their name is associated with the rock-cut caves in Māmaṇḍūr near Conjeveram, and the same occurs in many other places, perhaps also at the rock temples of Kalugumalai.

The famous Seven Pagodas near Madras, whose carvings are celebrated all over India, do not form an exception to this rule. The monoliths representing rathas (cars) or shrines named after Dharmarāja, Bhīma, Arjuna, Nakula and Sahadeva, and even to Draupadī, are among the most ancient of the carvings. Arjuna especially is a favorite; there are two rathas named after him, though one of them contains now an image of Gaṇeśa, and the most splendid carving, of which there exist also two copies, though one is in an incomplete state, is called Arjuna's penance. We must not forget that Arjuna is the presumed ancestor of the Pāṇḍyas.

I believe that these and other such carvings originated with the Pāṇḍya princes, who, by honoring their ancestors, conferred still greater distinction on themselves. A reigning dynasty alone could have undertaken the construction of such works. The assumption that these carvings originated with the Pāṇḍyas, under whose sway for some time the whole Eastern Coast remained, does not contradict any historical statement especially as the reign of the Pāṇḍya kings extended over a long period.

The execution of these sculptures is generally ascribed to the architectural energy of Buddhists and Jains, but there is nothing against the assumption that the Pāṇḍyas may have once also followed the religious tenets of the Buddhists and Jains and supported their co-religionists in the same manner in the South as the Maurya Kings of Pāṭaliputra did in the North.

If this hypothesis can be proved to rest on historical evidence, we shall perhaps be able to settle before long the date of the construction of these rock carvings in a more satisfactory manner than has been done up to this day.

GUSTAV OPPERT.

NATURAL HISTO

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CONTENTS

OF THE

MADRAS JOURNAL OF LITERATURE AND SCIENCE

FOR THE YEAR 1878.

I. On the Classification of Languages, by Dr. Gustav Oppert.

II. On the Ganga Kings, by Lewis Rice, Esq., Director of Public Instruction, Mysore.

III; i. On Druidical and other Antiquities, by Lieut.-Colonel Harry Congreve, late Madras Artillery.

,, ii. Note on a Raised Beach at Aden, by the same.

,, iii. Letter on Epitaphs, by "Old Mortality."

IV. On the Castes of Malabar, by K. P. Sankara Menon, B.A.

V. On the Ancient Commerce of India, by Dr. Gustav Oppert.

VI. On the Spawn of Turbinella Rapa, by Surgeon-Major G. Bidie, M.B.

APPENDIX.

Index to Sixty-two MS. Volumes in the Government Oriental Manuscripts Library, by Dr. Gustav Oppert.